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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

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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Footure Type	Aquatic Resources in Project Are		
Feature Type	Acres	Linear feet	
Potentia	Illy Jurisdictional Fe	atures	
PEM Wetlands	0.115	8	
PFO Wetlands	7.129	~	
Streams	1.462	3,219	
Total	8.706	3,219	
Potentially	Non-Jurisdictional	Features	
PEM Wetlands	0.128		
Drainage Ditches	2.836	7,123	
Total	2.964	7,123	

Table 1: Summary of Aquatic Resources

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.

Feature Name	Feature Type	Feature Impact Size (acres)	Feature Impact Length (linear feet)	Mitigation Required?
	Potentia	lly Jurisdictional Fe	atures	
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

Table 2: Summary of Proposed Impacts

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	1.10	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	о	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
	Potentially	Non-Jurisdictional	Features	
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 manmade 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 pillings.
 - 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 riprap 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

Constanting of	Lassian .		Impact	FCUs	
Feature Name	Acreage	Physical	Biological	Chemical	TOTALS
	PEM V	Vetlands			
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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	40.200.00		Impact	FCUs	
Feature Name	Acreage	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
	PFO V	Vetlands			
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
TOTALS	7.242	-4.078	-4.795	-4.581	1.2

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 (Cl). 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.

3.11	Unnamed O	Tributary 3.11			
1	0	3.11	044		
244			241	5	3,748
3.11	0	3.11	241	5	3,748
	Unnamed	Tributary	13		
3.05	2.75	0.30	1.4	3	Ξ
3.55	3.55	0		Ξ	-
3.86	3.86	0	7	8	10
3.49	3.39	0.10	14	2	3
	Unnamed	Tributary	/4		
3.06	2.50	0.56	7	2	8
	3.05 3.55 3.86 3.49	Unnamed 3.05 2.75 3.55 3.55 3.86 3.86 3.49 3.39 Unnamed	Unnamed Tributary 3.05 2.75 0.30 3.55 3.55 0 3.86 3.86 0 3.49 3.39 0.10 Unnamed Tributary	Unnamed Tributary 3 3.05 2.75 0.30 - 3.55 3.55 0 - 3.86 3.86 0 - 3.49 3.39 0.10 14 Unnamed Tributary 4	Unnamed Tributary 3 3.05 2.75 0.30 - - 3.55 3.55 0 - - 3.86 3.86 0 - - 3.49 3.39 0.10 14 2 Unnamed Tributary 4

Table 4: Permanent Impacts to Streams

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Table 4: Permanent	Impacts to Streams
Table 4. Fernanent	impacts to Streams

ream Reach Name	Existing CI	Post-Project Cl	CI ∆	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	о	2	o
		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	Upstrea	m		
Downstream	4.50	4.12	0.38	-	-	4
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 I	Downstre	am		
1-Downstream	4.13	4.13	o	-	÷	-
2-Middle	2.53	2.50	0.03	-	1 - E	÷
3-Upstream	4.00	3.75	0.25	-	÷.,	÷
RCI	3.55	3.46	0.09	3	2	1
		East Fo	rk Middle			
1-Downstream	4.00	3.75	0.25	-		1.2
2-Middle	4.06	3.91	0.15	÷	-	Ŧ
3-Upstream	4.13	4.13	0.00	+	÷	-
RCI	4.06	3.93	0.13	0	2	0
	TOTALS			513	<u>-</u>	4,654

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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 are 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. 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
TOTAL	7.244	÷	50.478

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	6	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.

8.0 Attachments

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

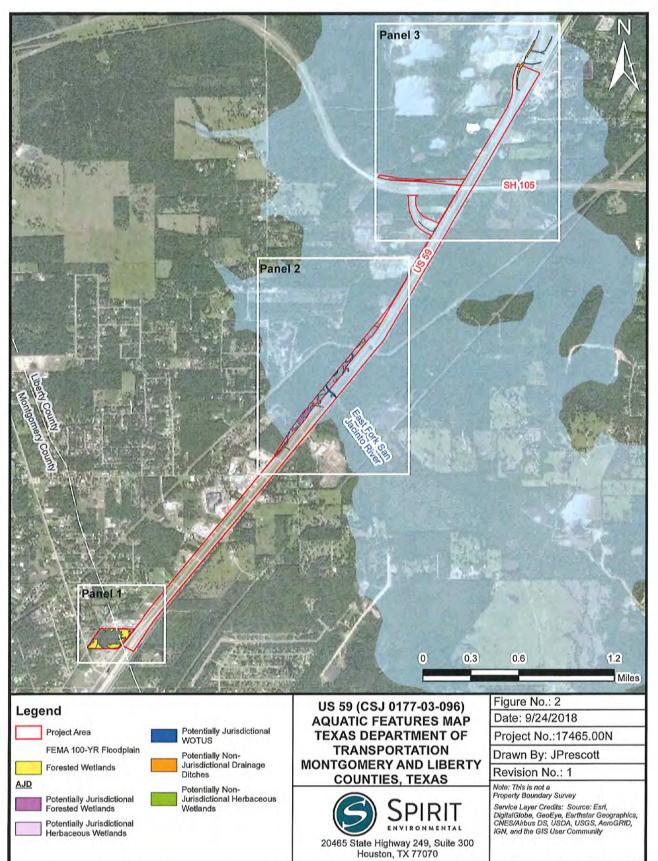
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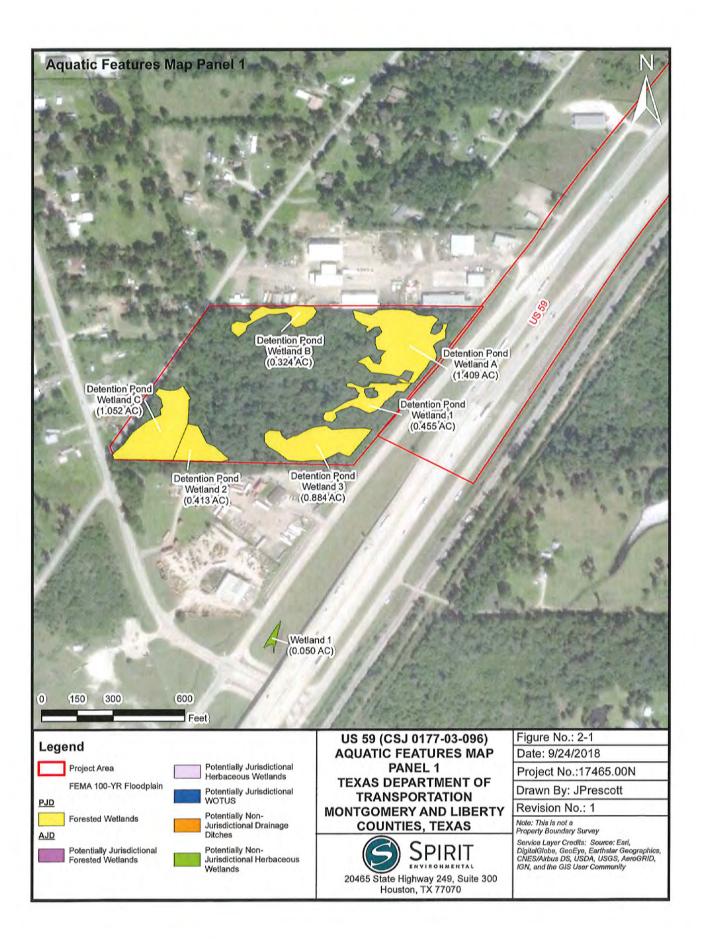
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Attachment 1

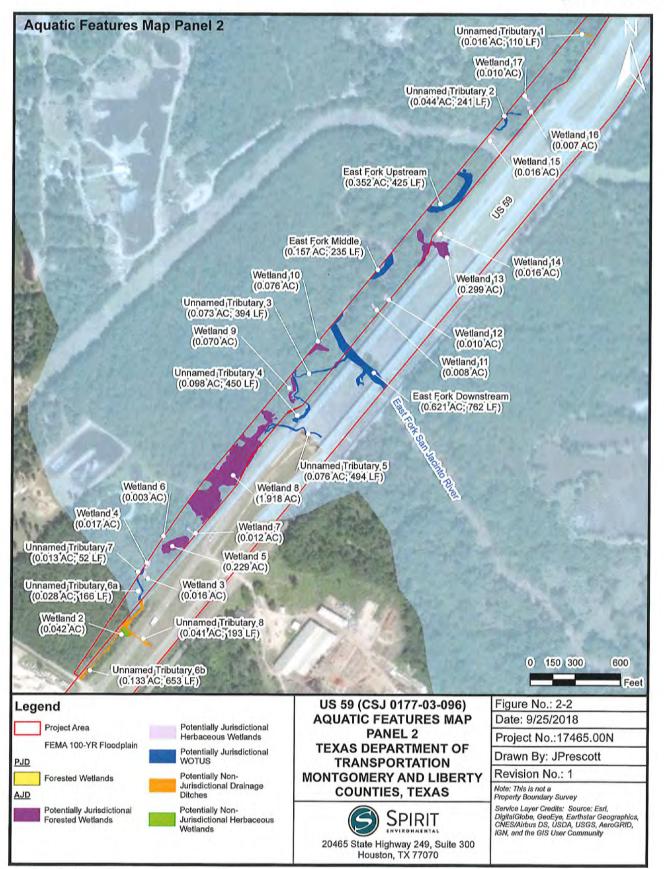
Figures

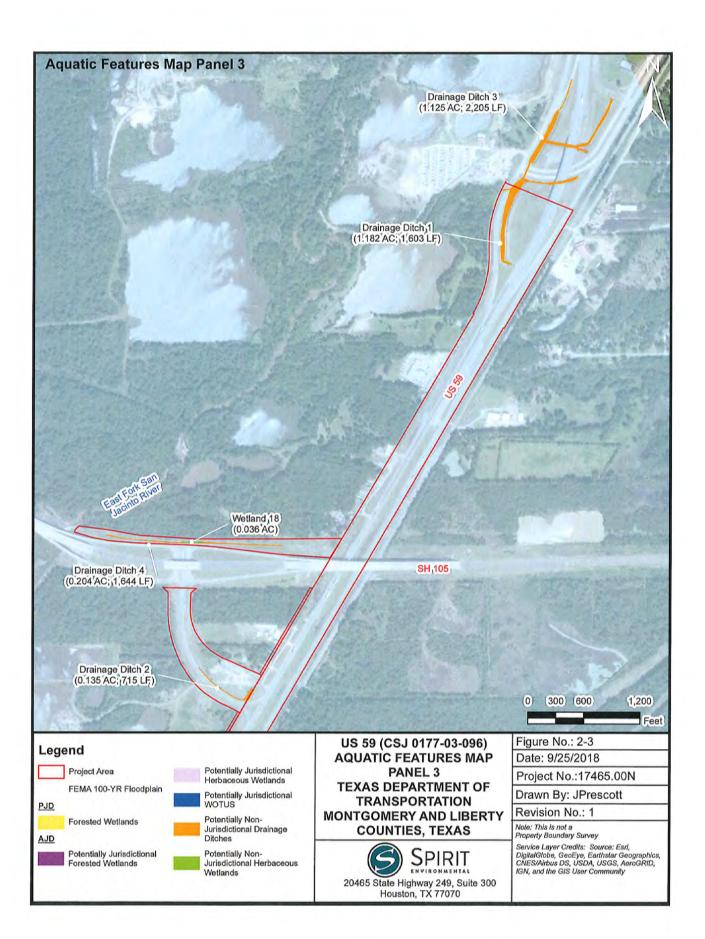






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Attachment 2

iHGM Model Results

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Riverine Forested HGM Interim (FCI formulas)

Temporary Storage & Detention of Storage Water:

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

Maintain Plant and Animal Community:

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

Removal & Sequestrian of Elements & Compounds:

$$\frac{\left[V_{wood} + V_{freg} + V_{dur} + \left[\frac{\left(V_{iopo} + V_{ewd} + V_{wood}\right)}{3}\right] + \left[\frac{\left(V_{dot} ritus + V_{redax} + V_{sarpt}\right)}{3}\right]\right]}{5}$$

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

Vdur	Vmid
Vfreg	Vherb
Vtopo	Vdetritus
Vewd	Vredox
Vwood	Vsorpt
Vtree	Veonneet
Vrich	
Vbasal	
Vdensity	

* 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: [{Vdur x Vfreq}1/2 X {Vtopo + {Vberb + Vmid/2}/2] 1/2

Maintain Plant and Animal Community: {Vmid + Vherb + Vconnect}/3

Removal & Sequestrian of Elements & Compounds: [[Vwood + Vfreg + Vdur + [{Vtopo + Vherb + Vmid }/3] +[{Vdetritus + Vredox + Vsorpt }/3]]/5

Vdur Vfreq Vtopo Vwood Vmid Vherb Vconnect Vdetritus Vredox Vsorpt

* 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 Acreage =

0.02

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.
Viopo	0.40	Less than 15% of WAA is represented by topographic features.
Vwood	0.10	WAA consists of 0-10% woody vegetation.
V _{mld}	0.25	WAA consists of 1-25% midstory coverage.
Vherb	0.75	WAA consists of 50-75% herbaceous coverage.
Vconnect	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.
Vsorpt	1.00	WAA is dominated by clayey solis.

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 _{dur}	1.00	In average year, 80% of WAA floods for 14 consecutive days.
Vfreq	1.00	WAA floods annually.
V _{topo}	0.40	Less than 15% of WAA is represented by topographic features.
Vwood	0.25	WAA consists of 11-33% woody vegetation.
V _{mid}	0.10	WAA consists of 1-25% midstory coverage.
Vherb	0.75	WAA consists of 50-75% herbaceous coverage.
Vconnect	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.
Vsorpt	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 creage = 0.229

creage = 1	C

Variable	Subindex	Notes:
Vdur	1.00	In an average year 80% of the WAA either floods and/or ponds for at least 14 consecutive days
Vfreq	1.00	Floods or ponds annually 5 out of 5 years (floodway)
Viepo	0.70	15-30% of the WAA is represented by dips, hummucks, channel sloughs and/or other topographic features
Vewd	0.30	Less than 3 pieces of cwd greater than 3" diameter along 100' transcet
Vwood	0.50	34-66% of the WAA is covered with woody vegetation
Vues	0,30	Less than 20% of the stand is cak, hickory, cypress, maple and/or elm
Vrich	0.60	Three tree species present
Vusal	0.40	The average basal area of the WAA is less than 60 square fVacre
Vdensky	0.60	The WAA averages a tree density of 250-500 trees/acre or 50-100 trees/acre
Vmld	0.50	Midstory coverage of the WAA is between 11-30
Vherb	1.00	Herbaceous cover in the WAA averages between 5-30%
Vdeutus	1.00	Greater than 85% of the area possesses an O or A horizon
Vredox	1.00	Redox concentrations represent at least 20% of the pedan within the top 4 inches of the soil surface, or featur masked due to parent material but conditions are conducive redoximarphic processes (many mottles)
Vsorpt	1.00	The WAA is dominated by montmorillonitic clayey soils (clay, clay loants, silty clay loants) or soils with high organic (2/1, 2/2, 3/1)
Voonnect	0.75	Wetland plus two or more habitat types (other than forested) or three or more habitat types

Functional Capacity Index (FCI) Temp. Storage 0.707

emp, Storage	0.707
of Water (1)	

Maintain Plant	0.533
& Animal Com. (2)	

Removal of 0.800 Elements (3)

Functional Capacity Units (FCU) Pre-Project

Project	
.162	physical
.122	biological
.183	chemica)
	0.162 0.122 0.183

Tree Calculations Data (Wetland 5)

Tree DBH (in.)	Tree Basal Area (Sq.Ft.)	Species
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
T	otal	
52.5	2.176	

Average Basal Area (Sq.Ft. per a	acre)
Plot Size (Sq.ft.))	4356
Sq.ft. per acre	43560
Total Basal Area (Sq.ft.)	2.176
Total BA per acre	21.763

0.10 (30 ft radius plot)

Number of Trees (per acre)	- <u>535</u>	
Plot Size (Sq.ft.)	4356	0.10 (
Number of Trees	9	
Total number of tress per acre	90	

0.10 (30 ft radius plot)

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

Wetland 6 Acreage =

0.003

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.	
Vwood	0.25	WAA consists of 11-33% woody vegetation.	
V _{mld}	0.25	WAA consists of 1-25% midstory coverage.	
Vherb	0.25	WAA consists of 1-25% herbaceous coverage.	
Vconnect	0.75	Three habitat types (open water, forested, lawn) other than wetland.	
Vdetritus	1.00	Greater than 85% of the area possesses O or A horizon.	
V _{redox}	1.00	Redox concentrations >20% of pedon.	
Vsorpt	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 =	

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.
Vwood	0.10	WAA consists of 0-10% woody vagetation.
V _{mid}	0.10	WAA consists of <1% midstory coverage.
Vherb	0.25	WAA consists of 1-25% herbaceous coverage.
Vconnect	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.
Vsorpt	1.00	WAA is dominated by clayey solls.

Functional Capacity Index (FCI)

Physical	0.54
Biota	0.37
Chemical	0.67

Functional Capacity Units (FCU)

0.01

Physical	0.01
Biota	0.00
Chemical	0.01

Interim Riverine Forested Hydrogeomorphic Analysis Worksheet Project # 8414T-EA

Wetland 8

Acreage =	1.92
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Variable	Subindex	Notes:
Vdur	1.00	In an average year 80% of the WAA sither floods and/or ponds for at least 14 consecutive days
Vfreq	1.00	Floods or ponds annually 5 out of 5 years (floodiway)
Vtopo	0.70	15-30% of the WAA is represented by dips, hummocks, channel sloughs and/or other topographic features
Vewd	1.00	More than 7 pirces of cwd greater than 3" diameter along 100' transect
Vwood	0.25	11-33% of the WAA is covered with woody vegetation
Vuee	0.30	Less than 20% of the stand is oak, hickory, cypress, maple and/or cim
V _{rich} '	0.60	Three tree species present
Vbosal	0.40	The average basal area of the WAA is less than 60 square fl/acre
Vdonsily	0.60	The WAA averages a tree density of 250-500 trees/acre or 50-100 trees/acre
Vmid	0.25	Midstory coverage of the WAA is less than 10%
Vherb	0.50	Herbaceous cover in the WAA averages between 31-50%
Vdetritus	1.00	Greater than 85% of the area possesses an O or A horizon
V _{redox}	1.00	Redox concentrations represent at least 20% of the pedon within the top 4 inches of the soil surface, or featur masked due to parent material but conditions are conducive redoximorphic processes (many mottles)
Vsorpt	1.00	The WAA is dominated by montmorillonific clayey soils (clay, clay loams, silty clay loams) or soils with hig organic (2/1, 2/2, 3/1)
Voonnect	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)	0.806
Maintain Plant	0.588
& Animal Com. (2)	

Removal of 0.780 Elements (3)

Functional Capacity Units (FCU)

Pre-Proje	ect	
Calculated FCU (Temp Storage)	1.547	physical
Calculated FCU (Maintain Plan & Animal)	1.127	biological
Calculated FCU (Removal of Elements)	1.497	chemical

Tree Calculations Data (Wetland 8)

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
Т	otal	
41.1	2.012	

Average Basal Area (Sq.Ft. per a	cre)
Plot Size (Sq.ft.))	4356
Sq.ft. per acre	43560
Total Basal Area (Sq.ft.)	2.012
Total BA per acre	20.122

0.10 (30 ft radius plot)

Number of Trees (per acre)		
Plot Size (Sq.ft.)	4356	0
Number of Trees	6	
Total number of tress per acre	60	

.10 (30 ft radius plot)

Interim Riverine Forested Hydrogeomorphic Analysis Worksheet Project # 8414T-EA

Wetland 9

Acreage = 0.07

Variable	Subindex	Notes:
Vdur	1.00	In an average year 80% of the WAA either floods and/or ponds for at least 14 consecutive days
Vfreq	1.00	Floods or ponds annually 5 out of 5 years (floodway)
Vtopo	0.40	Less than 15% of the WAA is represented by dips, hummocks, channel sloughs and/or other topographic features
Vowd	0.30	Less than 3 pieces of ewd greater than 3" diameter along 100' transect
Vwood	0.75	67-90% of the WAA is covered with woody vegetation
Vtree	1.00	At least 60% of the stand is oak, hickory, maple and/or elm. Black willow, cottonwood, tallow and sycamor do not represent more than 5% of the stand
Vrietr	0.40	One to two tree species present
V _{basal}	0.40	The average basal area of the WAA is less than 60 square ft/acre
Vdensity	0.40	The WAA averages less than 49 trees/acre or greater than 500 trees/acre
V _{mld}	0.50	Midstory coverage of the WAA is between 11-30
Vherb	1.00	Herbaceous cover in the WAA averages between 5-30%
V _{detritus} .	1.00	Greater than 85% of the area possesses an O or A horizon
V _{redox}	0.10	Redox features less than 20%
Vsorpt	0.50	The WAA is dominated by loamy (silt loams, very fine saudy loams, loam) or non-montmorillonitic clays
Vconnect	0.75	Wetland plus two or more habitat types (other than forested) or three or more habitat types

Functional Capacity Index (FCI) Temp. Storage 0.695

of Water (1)	
Maintain Plant	0.600
& Animal Com. (2)	

Removal of 0.753 Elements (3)

Functional Capacity Units (FCU)

Pre-Proj	ect	
Calculated FCU (Temp Storage)	0.049	physical
Calculated FCU (Maintain Plan & Animal)	0.042	biological
Calculated FCU (Removal of Elements)	0.053	chemical

Tree Calculations Data (Wetland 9)

Tree DBH (in.)	Tree Basal Area (Sq.Ft.)	Species
5.4	0.159	Ulmus americana
6.1	0.203	Ulmus americana
4.0	0.087	Ulmus americana
3.5	0.067	Ulmus americana
3.2	0.056	Ulmus crassifolia
Te	otal	
22.2	0.572	

Average Basal Area (Sq.Ft. per a	cre)
Plot Size (Sq.ft.))	4356
Sq.ft. per acre	43560
Total Basal Area (Sq.ft.)	0.572
Total BA per acre	5.719

0.10 (30 ft radius plot)

Number of Trees (per acre)		
Plot Size (Sq.ft.)	4356	(
Number of Trees	5	
Total number of tress per acre	50	

.10 (30 ft radius plot)

Interim Riverine Forested Hydrogeomorphic Analysis Worksheet Project # 8414T-EA

Wetland 10

Acreage = 0.08

Variable	Subindex	Notes:
Vdur	1.00	In an average year 80% of the WAA either floods and/or ponds for at least 14 consecutive days
Vfreq	1.00	Floods or ponds annually 5 out of 5 years (floodway)
Viepo	0.40	Less than 15% of the WAA is represented by dips, hummocks, channel sloughs and/or other topographic features
Vowd	0.30	Less than 3 pieces of owd greater than 3" diameter along 100' transect
Vwood	0.25	11-33% of the WAA is covered with woody vegetation
Virea	0,30	Less than 20% of the stand is oak, hickory, cypress, maple and/or elm
Vrich	0.40	One to two tree species present
Vbasal	0.40	The average basal area of the WAA is less than 60 square fl/acre
Vdensity	0.40	The WAA averages less than 49 trees/acre or greater than 500 trees/acre
Vinid	0.25	Midstory coverage of the WAA is less than 10%
Vherb	0.30	Herbaceous cover in the WAA is less than 5% or greater than 50%
Vdetritus	0.30	Less than 10% of the area possesses an O or A horizon
Vredox	1.00	Redox concentrations represent at least 20% of the pedon Within the top 4 incites of the soil surface, or feature marked due to patent material but conditions are conducive redoximorphic processes (many motiles
Vsorpt	1.00	The WAA is dominated by montmorillonitic clayey soils (clay, clay loams, silty clay loams) or soils with hig organic (2/1, 2/2, 3/1)
Voonneol	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	0.404
& Animal Com. (2)	

Removal of 0,667 Elements (3)

Functional Capacity Units (FCU)

Pre-Proje	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 (in.)	Tree Basal Area (Sq.Ft.)	Species
4.4	0.106	Triadica sebifera
4.3	0.101	Ulmus alata
3.8	0.079	Ulmus alata
Tota		
12.5	0.285	

Average Basal Area (Sq.Ft. per a	cre)
Plot Size (Sq.ft.))	4356
Sq.ft. per acre	43560
Total Basal Area (Sq.ft.)	0.285
Total BA per acre	2.852

0.10 (30 ft radius plot)

Number of Trees (per acre)		
Plot Size (Sq.ft.)	4356	2.00
Number of Trees	3	
Total number of tress per acre	30	

0.10 (30 ft radius plot)

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

Wetland 11

Acreage =

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

Functional Capacity Index (FCI)

Physical	0.50
Biota	0.37
Chemical	0.51

Functional Capacity Units (FCU)

0.008

Physical	0.004	
Biota	0.003	
Chemical	0.004	

Wetland 12 Acreage =

0.01

Variable	Sub-Index	Notes:
V _{dur}	0.75	In average year, 80% of WAA floods for 7 consecutive days.
Vfreq	1,00	WAA floods annually.
V _{topo}	0.40	Less than 15% of the WAA is represented by topographic features.
Vwood	0.10	0-10% of the WAA is covered with woody vegetation.
V _{mld}	0.10	Midstory coverage of the WAA is equal to or less than 1%.
Vherb	0.25	WAA consists of 1-25% herbaceous coverage.
Vconnect	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.
Vredox	1.00	Redox concentrations >20% of pedon.
Vsorpt	1.00	WAA is dominated by clayey soils.

Functional Capacity Index (FCI)

i unononiai oape	
Physical	0.50
Biota	0.37
Chemical	0.62

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:
Vdur	1.00	In an average year 80% of the WAA either floods and/or ponds for at least 14 consecutive days
Vireq	1.00	Floods or ponds annually 5 out of 5 years (floodway)
Vtopo	0.70	15-30% of the WAA is represented by dips, hummocks, channel sloughs and/or other topographic features
Vowd	1.00	More than 7 pirces of cwd greater than 3" diameter along 100' transect
Vwood	0.75	67-90% of the WAA is covered with woody vegetation
Viree	1.00	At least 60% of the stand is eak, hickory, maple and/or elm: Black willow, cottonwood, tallow and sycamore do not represent more than 5% of the stand
Vrich	0.60	Three tree species present
Vbesal	0.40	The average basal area of the WAA is less than 60 square fl/acre
Vdensity	0.60	The WAA averages a tree density of 250-500 trees/acre or 50-100 trees/acre
Vmld	0.25	Midstory coverage of the WAA is less than 10%
Vherb	0.30	Herbaccous cover in the WAA is less than 5% or greater than 50%
Vdetritus	1.00	Greater than 85% of the area possesses an O or A horizon
Vredax	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)
Vsorpt	1.00	The WAA is dominated by montmorillonitic clayey soils (clay, clay loams, silly clay loams) or soils with high organic (2/1, 2/2, 3/1)
Vconnect	0.75	Wetland plus two or more habitat types (other than forested) or three or more habitat types

Functional Capacity Index (FCI) Te 1

emp. atorage	0.904	
of Water (1)		

Maintain Plant	0.688
Animal Com. (2)	

Removal of Elements (3) 0.913

Functional Capacity Units (FCU) Pre-Project

Pre-Project		
Calculated FCU (Temp Storage)	0.270	physical
Calculated FCU (MaIntain Plan & Animal)	0.206	biological
Calculated FCU (Removal of Elements)	0.273	chemical

8

Tree Calculations Data (Wetland 13)

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
_		
Т	otal	
46.2	2.225	

Average Basal Area (Sq.Ft. per acre)		
Plot Size (Sq.ft.))	4356	
Sq.ft. per acre	43560	
Total Basal Area (Sq.ft.)	2.225	
Total BA per acre	22.247	

0.10 (30 ft radius plot)

Number of Trees (per acre)		
Plot Size (Sq.ft.)	4356	
Number of Trees	7	
Total number of tress per acre	70	

0.10 (30 ft radius plot)

Wetland 14 Acreage =

0.02

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 the WAA is represented by topographic features.
V _{wood}	0.25	11-33% of the WAA is covered with woody vegetation.
V _{mid}	0.25	Midstory coverage of the WAA is 1-25%.
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)

Physical	0.57
Biota	0.42
Chemical	0.71

	<u> </u>
0.01	
0.01	
0.01	
	0.01

Wetland 15 Acreage =

0.02

Variable	Sub-Index	Notes:
V _{dur}	0.75	In average year, 80% of WAA floods for 7 consecutive days.
V _{freq}	1.00	WAA floods annually.
V _{topo}	0.10	Smooth, flat, or very gentle undulating; little or no topographic features
Vwood	0.10	0-10% of the WAA is covered with woody vegetation.
V _{mid}	0.10	Midstory coverage of the WAA is 0-1%.
V _{herb}	1.00	WAA consists of >75% herbaceous coverage.
Vconnect	0.75	Three habitat types (open water, forested, lawn) other than wetland.
V _{detritus}	0.30	Less than 10% 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)

Physical	0.53
Biota	0.62
Chemical	0.60

0.01	
0.01	
0.01	
	0.01

Wetland 16 Acreage =

0.007

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

Physical	0.004] .
Biota	0.003]
Chemical	0.004]
	`	-

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)

Physical	0.57
Biota	0.42
Chemical	0.71

Physical	0.01
Biota	0.00
Chemical	0.01

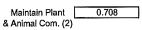
Interim Riverine Forested Hydrogeomorphic Analysis Worksheet Project # 8414T-EA

Wetland 1

(Proposed Detention Pond Tract) Acreage = 0.45

Variable	Subindex	Notes:
V _{dur}	0.25	In an average year 25-50% of the WAA either floods and/or ponds for at least 7 consecutive days
V _{freq}	0.25	Floods or ponds less than 2 out of 5 eyars (100-500 yr floodplain grey w/out elevations)
V _{topo}	0.70	15-30% of the WAA is represented by dips, hummocks, channel sloughs and/or other topographic features
V _{cwd}	0.50	From 3-7 pieces of cwd greater than 3" diameter along 100' transect
V _{wood}	1.00	Greater than 90% of the WAA is covered with woody vegetation
V _{tree}	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 _{rich}	0.80	Four tree species present
V _{basal}	0.60	The average basal area of the WAA is between 60-80 square ft/acre
V _{density}	1.00	The WAA averages a tree density of 100-250 trees/acre
V _{mid}	0.50	Midstory coverage of the WAA is between 11-30
V _{herb}	0.30	Herbaceous cover in the WAA is less than 5% or greater than 50%
V _{detritus}	0.30	Less than 10% of the area possesses an O or A horizon
V _{redox}	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)
Vsorpt	0.10	The WAA is dominated by sandy soils (sands, loamy fine sands, loamy sands)
Vconnect	0.75	Wetland plus two or more habitat types (other than forested) or three or more habitat types

Functional Capacity Index (FCI) Temp. Storage 0.428 of Water (1)



Removal of 0.540 Elements (3)

Pre-Pro	Pre-Project				
Calculated FCU (Temp Storage)	0.193	physical			
Calculated FCU (Maintain Plan & Animal)	0.319	biological			
Calculated FCU (Removal of Elements)	0.243	chemical			

Tree Calculations Data (Wetland 1)

Proposed Det. Pond Tract

DBH and Basal Area		0
Tree DBH (in.)	Tree Basal Area (Sq.Ft.)	Species
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 styraciflu
8.4	0.385	Liquidambar styraciflu
5.6	0.171	Liquidambar styraciflu
7.8	0.332	Liquidambar styraciflu
12.9	0.908	Triadica sebifera
7.9	0.340	Triadica sebifera
8.2	0.367	Triadica sebifera
8.9	0.432	Triadica sebifera
Ţ	otal	
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 tress per acre	140

.

0.10 (30 ft radius plot)

Im	pacts to De	tentior	Pond Wetland 2 (PFO)		
Pre-Construction				tion Conditions	
Acres	0.41		Acres	0.41	
Hectares	0.17		Hectares	0.17	
Variable	Subindex	1	Variable	Subindex	
Vallasie	0.25		Vdur	0.00	
Vidi	0.25		Vfreq	0.00	
Vileq	0.20		Vtopo	0.00	
Vcwd	0.50	1	Vcwd	0.00	
Vwood	1.00		Vwood	0.00	
Virce	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	1	Vmid	0.00	
Vherb	0.30	1	Vherb	0.00	
Vdetritus	0.30	1	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	0.177	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

lin lin	pacts to De	tention Po	ond Wetland 3 (PFO)		
Pre-Construction	Conditions		Post-Constructio	n Conditions	
Acres	0.88	1	Acres	0.88	
Hectares	0.36]	Hectares	0.36	
Variable	Subindex	1	Variable	Subindex	
Vdur	0,25		Vdur	0.00	
Vfreq	0.25		Vfreq	0.00	
Vtopo	0.70	1	Vtopo	0.00	
Vcwd	0.50	1	Vcwd	0.00	
Vwood	1.00	1	Vwood	0.00	
Vtree	1.00	1	Vtree	0.00	
Vrich	0.80		Vrich	0.00	
Vbasal	0.60		Vbasal	0.00	
Vdensity	1.00		Vdensity	0.00	
Vmid	0.50	1	Vmid	0.00	
Vherb	0.30	1	Vherb	0.00	
Vdetritus	0.30	1	Vdetritus	0.00	
Vredox	1.00		Vredox	0.00	
Vsorpt	0.10	1	Vsorpt	0.00	
Vconnect	0.75]	Vconnect	0.00	
Function Type	FCI	FCU	Function Type	FCI	FC
Physical Function	0.428	0.379	Physical Function	0.00	0.0
Biological Function	0.708	0.626	Biological Function	0.00	0.0
Chemical Function	0.540	0.477	Chemical Function	0.00	0.0

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

iHGM Calculations

	Impa	cts to Wetl	and A (PFO)		
Pre-Construction	Conditions		Post-Construction	on Conditions	_
Acres	1.410		Acres	1.41	
Hectares	0.57		Hectares	0.57	
Variable	Subindex		Variable	Subindex	1
Vdur	0.25	-	Vdur	0.00	1
Vfreq	0.25	1	Vfreq	0.00	1
Vtopo	0.70	1 1	Vtopo	0.00	1
Vcwd	0.50		Vcwd	0.00	
Vwood	1.00		Vwood	0.00	
Vtree	1.00		Vtree	0.00]
Vrich	0.80		Vrich	0.00	1
Vbasal	0.60		Vbasal	0.00]
Vdensity	1.00	-	Vdensity	0.00]
Vmid	0.50		Vmid	0.00	
Vherb	0.30	7	Vherb	0.00	
Vdetritus	0.30	1 1	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	FC
Physical Function	0.428	0.604	Physical Function	0.00	0.0
Biological Function	0.708	0.999	Biological Function	0.00	0.0
Chemical Function	0.540	0.761	Chemical Function	0.00	0.0

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

Impacts to Wetland B (PFO)					
Pre-Construction	Conditions		Post-Construction	on Conditions	
Acres	0.32		Acres	0.32	
Hectares	0.13]	Hectares	0.13	
Variable	Subindex	1 I	Variable	Subindex	1
Variable	0.25		Vdur	0.00	·
Vidi	0.25		Vfreq	0.00	
Viceq	0.70		Vtopo	0.00	1
Vcwd	0.50		Vcwd	0.00	1
Vwood	1.00		Vwood	0.00	
Vtree	1.00	1	Vtree	0.00	
Vrich	0.80		Vrich	0.00	
Vbasal	0.60		Vbasal	0.00	
Vdensity	1.00		Vdensity	0.00	
Vmid	0.50	1	Vmid	0.00	
Vherb	0.30	1 1	Vherb	0.00	
Vdetritus	0.30	1	Vdetritus	0.00	
Vredox	1.00	1	Vredox	0.00	
Vsorpt	0.10	1 1	Vsorpt	0.00	
Vconnect	0.75		Vconnect	0.00	
Function Type	FCI	FCU	Function Type	FCI	FCU
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

	Impa	cts to Wetla	and C (PFO)		
Pre-Constructio	on Conditions		Post-Constructi	on Conditions	-
Acres	1.05		Acres	1.05	
Hectares	0.43]	Hectares	0.43]
Variable	Subindex	-	Variable	Subindex	1
Vdur	0.25		Vdur	0.00	
Vfreq	0.25		Vfreq	0.00	1
Vtopo	0.70		Vtopo	0.00	1
Vcwd	0.50		Vcwd	0.00	1
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	7 1	Vredox	0.00	
Vsorpt	0.10	7 I	Vsorpt	0.00	
Vconnect	0.75]	Vconnect	0.00	
Function Type	FCI	FCU	Function Type	FCI	FC
Physical Function	0.428	0.450	Physical Function	0.00	0.0
Biological Function	0.708	0.745	Biological Function	0.00	0.0
Chemical Function	0.540	0.568	Chemical Function	0.00	0.0

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

Attachment 3

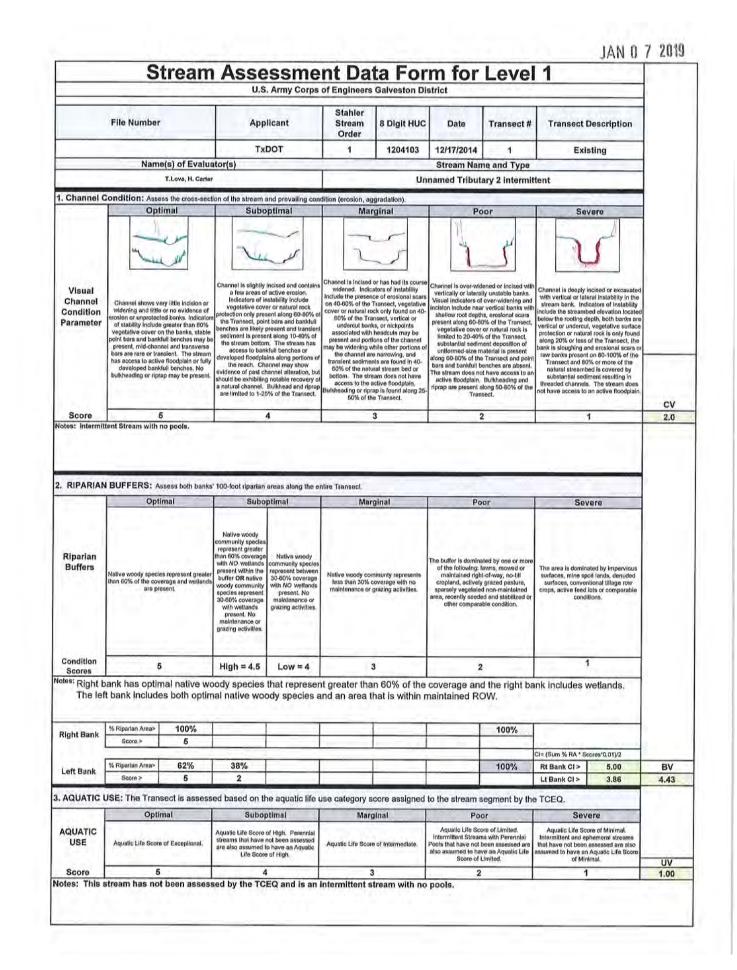
Level 1 Stream Assessment Data Forms

Stream Assessment Summary Form (Form 2)

Galveston District Stream Condition Assessment SOP

Project #	Applicant		Date
•	Texas Department of Transportation - Beau	umont District	Dec-18
Evaluato	rs	HUC	Locality
J. Prescott, A. Greut	er, E. Donato	1204103.00	Liberty/Montgomery Counties

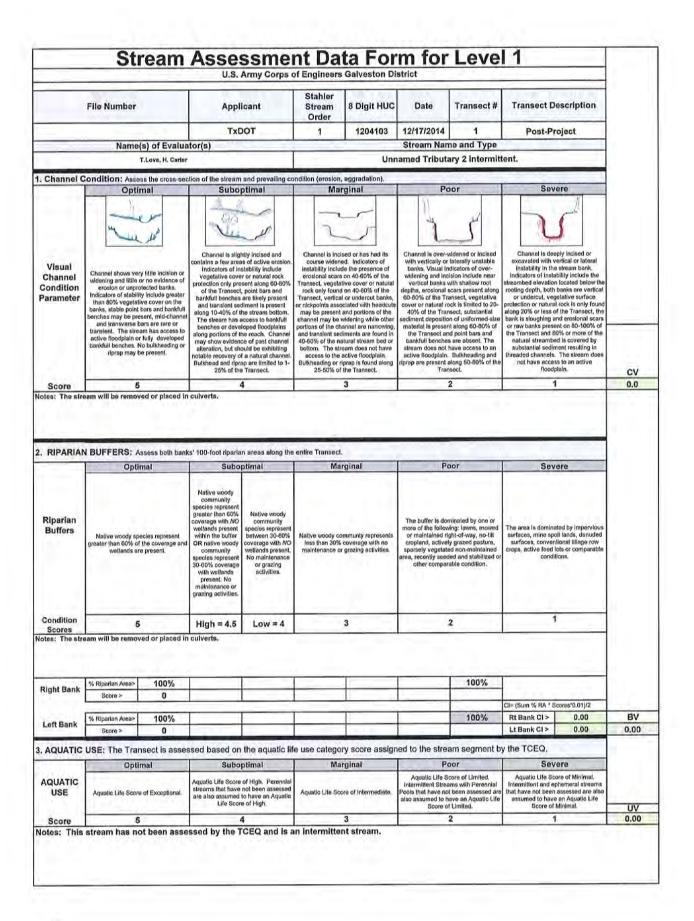
		Condition Index Before	Condition Index After
Stream Name	Transect ID	(RCI)	(RCI)
Unnamed Tributary 2	1	3.11	0.00
Unnamed Tributary 3	1	3.05	2.75
Unnamed Tributary 3	2	3.55	3.55
Unnamed Tributary 3	3	3.86	3.86
Unnamed Tributary 4	1	3.06	2.50
Unnamed Tributary 5	1	2.55	2.50
Unnamed Tributary 6A	1	2.69	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
Average RC	1	3.522	3.036
Impact Facto	or	Ranges from 2	2-5 - see report
Linear Feet of In		5	13
Compensation Req	uirement	4,651	Credits



		Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description	
Тхрот		Liberty Co.	R3	1204103	12/17/2014	1	Existing	
ALTERATION: Stream crossing	gs, riprap, concrete	, gablons, or co	ncrete blocks, straig	phtening of chann	el, channelization,	embankments, s	poil piles, constrictions, livestock	
Optimal	Subop	timal	Marg	inal	Po	or	Severe	
	Impacted by dredg levees, culverts, ri armor, drop structu structures. Evidence may be present, but stability have recover present, have no ob	ing, dams, dikes, prap, bulkheads, res or withdrawal e of past alteration stream pattern an- red. Withdrawals, servable affect on	ansect is mas, dikes, limpacted by dredging, dams, dikes, limpacted by dredging, d		impacted by dredg levees, culverts, r armor, drop structu structures. Evidenc is present, and st stability are no Withdrawals, if pre observable affect	ping, dams, dikes, iprap, bulkheads, ures or withdrawal e of past alteration ream pattern and bit recovering. sent, may have an on both flow and	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, inprap, buikheads, armor, drog structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.	AV
5	4		3		2		1	5.00
						PELON		
REACH C	CONDITION I	NDEX and	STREAM CON	DITION UN	TS FOR THIS	6 REACH		
	Optimal Channelization, dredging, atteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, cuiverts, riprap, builheads, armor, drop structures or withdrawal structures within the Transect. 5 anneling or alterations are	Optimal Subop Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or ha normalized. No dama, dikes, levees, culverts, fiprap, buikheads, armor, drop shuctures or withdrawal structures within the Transect. Less than 30% of levees, culverts, fiprap, buikheads, armor, drop shuctures or may be present, bat structures. Evidence may be present, have no ob fior 5 4 anneling or alterations are present; the	Optimal Suboptimal Channelization, dredging, alteration of Nardening absent. Stream has unaltered pattern or has normalized. No drams, dikes, levees, culverts, riprap, buikheads, armor, drop structures or withdrawal structures within Transect. Less than 30% of the Transect is invoctures. Evidence of past alteration and the structures within may be present, but stream pattern an structures. Evidence of past alteration may be present, but stream pattern an structures. Evidence of past alteration may be present, but stream pattern an structures. Evidence of past alteration may be present, but stream pattern an structures. Evidence of past alteration may be present, but stream pattern an structures. Evidence of past alteration may be present, but stream pattern an structures. Evidence of past alteration may be present, but stream pattern an structures. Evidence of past alteration may be present, but stream pattern an structures. Evidence of past alteration may be present, but stream pattern an structures. Evidence of past alteration may be present, but stream pattern an structures. Evidence of past alteration may be present, but stream pattern an structures. Evidence of past alteration may be present, but stream pattern an structures. Evidence of past alteration may be present, but stream pattern an structures. Evidence of past alteration may be present, but stream pattern an structures. Evidence of past alteration may be present, but stream pattern an structures. Evidence of past alteration may be present, but stream pattern an structures. Evidence of past alteration structures. Evidence of past alteration st	Optimal Suboptimal Marg Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, tiprap, buikheads, armor, drop structures or vitidrawal structures. Evidence of past alteration withdrawal structures within the Transect. Between 30-80% impacted by dredging, dams, dikes, levees, culverts, riprap, buikheads, armor, drop structures or vitidrawal structures. Evidence of past alteration may be present, but stream pattern and mov. Between 30-80% impacted by dredgi armor, drop structures or vitidrawal structures. Evidence may be present, but stream pattern and tability are begin flow. Between 30-80% impacted by dredgi armor, drop structures or vitidrawal structures. Evidence may be present, but stream pattern and tability are begin vitidrawal structures within the stability have recovered. Withdrawal structures observable affect or structures. 5 4 3 anneling or alterations are present; therefore, the channel alteration and the present but stream pattern and there is the structures of the structures of the structures. Structures of the structures of the structures of the structures of the structures of the structures of the structures of the structures of the structures of the structures of the structures of the struc	ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channelization, dredging, alteration in hardening absent. Stream has unaltered pattere of han ormalized by dredging, dams, dikes, levees, culverts, riprap, builkheads, armor, drop structures or withdrawal, structures. Evidence of past alteration may be present, but stream pattern and subilkheads, structures. Stream covered. Withdrawals, if present, have necovered. Withdrawals, if present, have recovered. Withdrawals, if present, have recovered. Withdrawals, if present, have necovered. Withdrawals, if present, but stream pattern and subility are beginning to recover. 6 4 3 anneling or alterations are present; therefore, the channel alteration is optimal	ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, Optimal Suboptimal Marginal Po Channelization, dredging, alteration hardening absent. Stream has unaltered patter or han ormalized. No dams, dikes, levese, culverts, riprap, buikheads, more, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if pre- sent, have on coverable affect on flow. Between 30-60% of the Transect is impacted by dredging, dams, dikes, levese, culverts, riprap, buikheads, armor, drop structures. Evidence is present, but stream pattern and stability have recovered. Withdrawals, if present, have an observable affect on flow. Between 30-60% of the Transect is impacted by dredging, dams, dikes, levese, culverts, riprap, buikheads, armor, drop structures. Evidence stability have recovered. Withdrawals, if present, have an observable affect on flow. Withdrawals, if pre- observable affect on flow, but no observable affect on subitat or biola. Yet alternation stability are present, but stream pattern and stability are present, but stream, and structures. 6 4 3 2	ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, st Optimal Suboptimal Marginal Poor Channelization, dredging, alteration of hardening absent. Steam has of dees, cluvers, finpap, bulkheads, armor, drop structures or withdrawal dams, dikes, levese, cuvers, finpap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are octored. Withdrawal, present, but stream pattern and stability are beginning to recovering. Between 60-90% of the Transect is impacted by dredging, dams, dikes, levese, cuvers, finpap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are octorecvering. Between 60-90% of the Transect is impacted by dredging, dams, dikes, levese, cuvers, finpap, bulkheads, armor, drop structures. Evidence of past alteration may be present, but stream pattern and stability are octorecvering. Withdrawals, if present, may have an observable affect on flow, but on observable affect on thous on observable affect on thous on the stream pattern and stability are octorecvering. Withdrawals, if present, may have an observable affect on flow, but on thow and habilat or biota. Withdrawals, if present, and have an observable affect on flow, but have and the observable affect on thous on the stream pattern and stability are on the covering.	ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock Optimal Suboptimal Marginal Poor Severe Channelization, dredging, alteration hardening absent. Stream has unaltered patter or han ormalized. No dams, dikes, levese, culverts, riprap, buikheads, invoice, drovertures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are recovered. Withdrawals, if present, and stream pattern and stability are recovered. Withdrawals, if present, and stream pattern and stability are recovered. Withdrawals, if present, and stream pattern and stability are present, but stream pattern and stability are recovered. Withdrawals, if present, may have and observable affect on flow, but no observable affect on flow, but no doservable affect on habitat or biota. Between 30-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, buikheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are recovered. Withdrawals, if present, may have and observable affect on flow, but no observable affect on flow, but no observable affect on habitat or biota. Between 30-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, buikheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are ot recovering. Between 30-100% of the Transect is impacted by dredging, dams, dikes, is present, and stream pattern and stability are ot recovering. Between 30-100% of the Transect is involveres or withdrawal structures. Evidence of past alteration is present, bas are other to both flow and



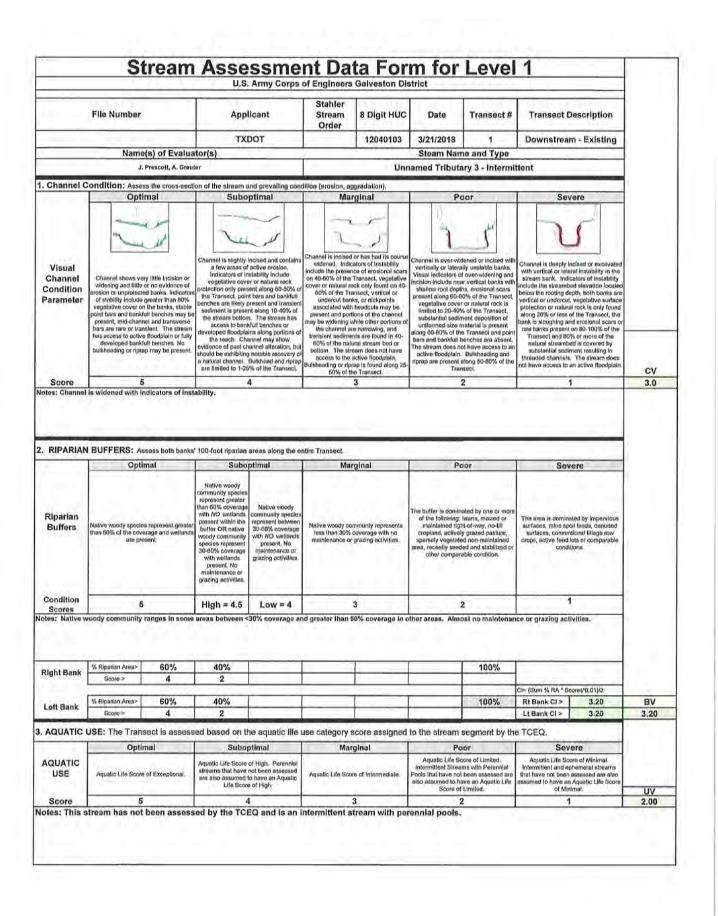




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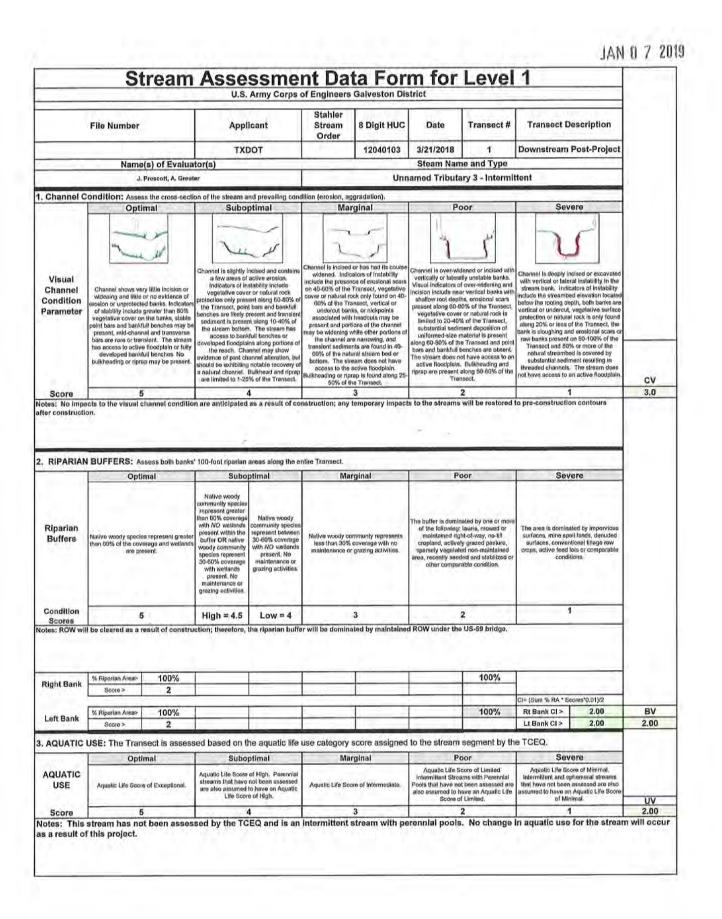
Project #	Applicant	10001-0	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description	
	TxDOT		Liberty Co.	R3	1204103	12/17/2014	1	Post-project	
4. CHANNE	LALTERATION: Stream cross	ings, riprap, conc	rete, gabions, or	concrete blocks, st	raightening of ch	annel, channeliza	tion, embankmen	ts, spoil piles, constrictions,	
	Optimal Suboptimal Marginal Poor Si								
Channel Alteration	Channelization, dredging, alteration or hardrening absent. Stream has unaltered pattern or has normalized, No dams, dikes, levees, cuiverts, riprap, buikheada, armor, drop structures or withdrawal structures within the Transect.	Impacted by dred levees, culverts, armor, drop struct structures. Evidence may be present, i and stability h Withdrawals, if		Between 30-60% impacted by dredg lavees, culverts, n armor, drop structures. Evidenc may be present, b and stability are beg Withdrawals, if pre- observable affect of observable affect of	ging, dams, dikes, iprap, bulkheads, ures or withdrawal e of past alteration but stream pattern ginning to recover. sent, may have an t on flow, but no	Between 60-90% impacted by dredy levees, culverts, a armor, drop struct structures. Evidenc is present, and si stability are n Withdrawals, if pre observable affect habitat e	ging, dams, dikes, iprap, bulkheads, ures or withdrawal e of past alteration ream pattern and ot recovering, sent, may have an on both flow and	Belween 90-100% of the Transect is impacted by deciging, dams, dikes, levees, cuiverts, riprap, buikheada, amor, drop siructures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little io no habitat or biota.	AV
SCORE	5		4	3	3		2	1	0.00
Notes: This	stream has not been asse								
	REACH C	ONDITION I	NDEX and S	STREAM CON	IDITION UN	ITS FOR TH	Contraction of the local division of the loc		1.1
								CONDITION INDEX (CI) >>	0.00





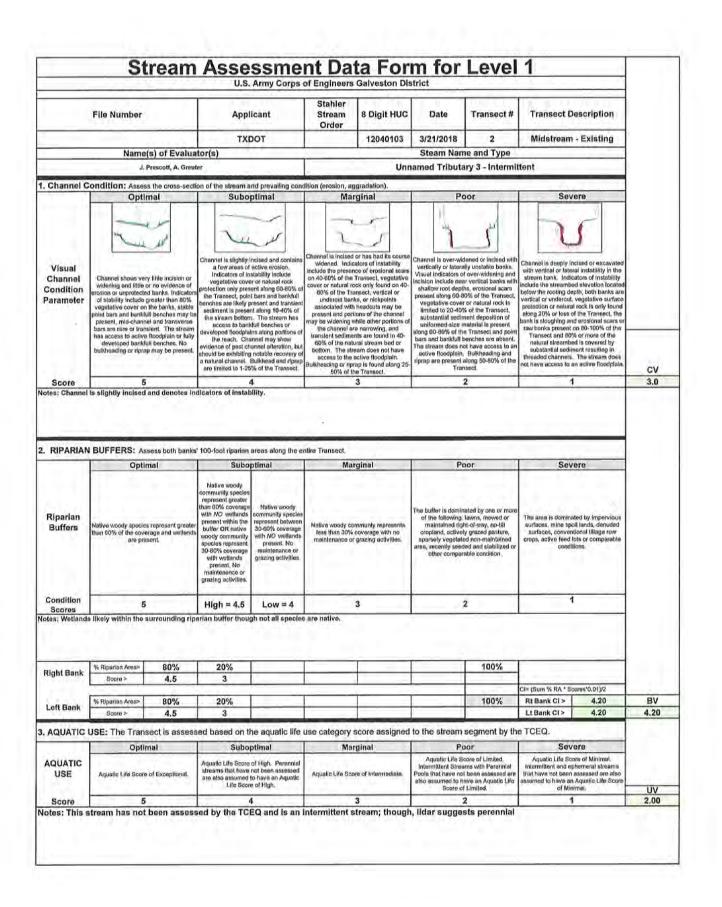
Project #	Applicant	1	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description	
					12040103	3/21/2018	1	Downstream	
. CHANNEL	ALTERATION: Stream crossin	ngs, riprap, concret	e, gabions, or cor	crete blocks, straig	htening of chann	el, channelization,	, embankments, s	poll piles, constrictions, livestock	
1.000	Optimal	Subor	otimal	Marg	inal	Po	or	Severe	
Channel Alteration	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culvorts, førap, 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 chuchure, Eudosce of past alterative		Between 30-60% of impacted by dredg levees, culverts, ri armor, drop structu structures. Evidence may be present, but stability are begin Withdrawals, if pres observable affect of observable affect of	ing, dams, dikes, prap, bulkheads, res or withdrawal s of past alteration stream pattern and ning to recover. ent, may have an on flow, but no	structures. Evidence is present, and st	ging, dams, dikes, riprap, bulkheads, ures or withdrawal se of past alteration ream pattern and ot recovering, sent, may have an t on both flow and	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, builkheads, armor, drop structures or wilhdrawal structures. Wilhdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biots.	AV
SCORE	5	4		3	(2	1	4.00
lotes: Evide	nce of past alterations and	l recovery.							
		CONDITION I		NUMBER AND ADDRESS	IN LOCAL LINES	TO FOD TIU	DEAGH		





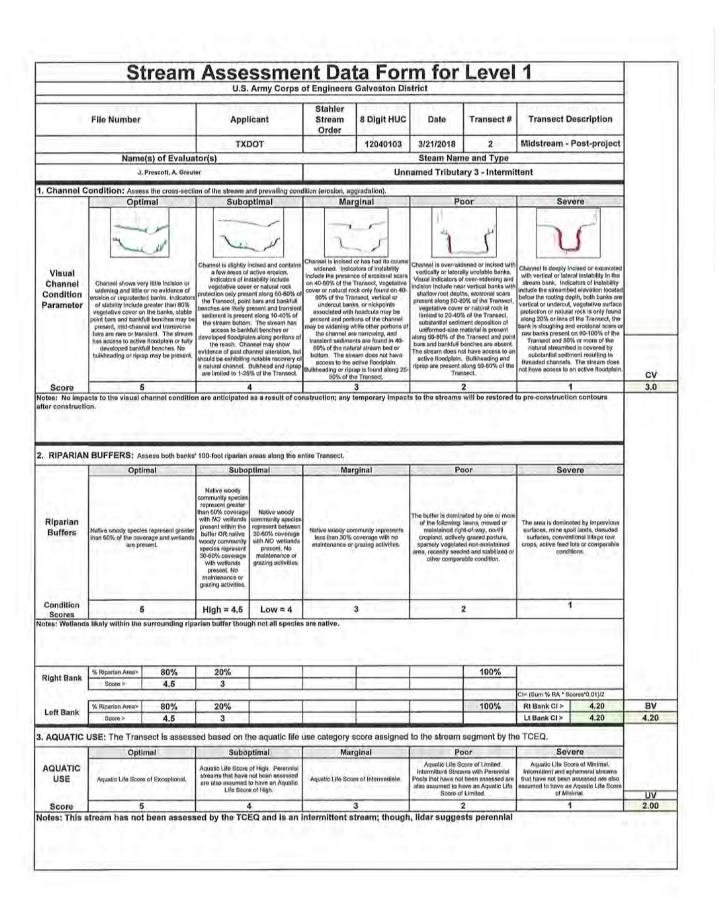
Project #					HUC	Date	Transect #	Transect Description	
. CHANNEL A				12040103 3/21/2018 1	1	Downstream Post-Project			
100	ALTERATION: Stream crossing	gs, riprap, concret	e, gabions, or cor	ncrete blocks, straiç	htening of chann	el, channelization,	embankments, s	poil piles, constrictions, livestock	
	Optimal	Subo	otimal	Marg	Inal	Po	or	Severe	
Channel una		Less than 30% of Impacted by dredy levees, cuiverts, a armor, drop struct structures. Evidenc may be present, but stability have recove present, have no o flo	ging, dams, dikes, iprap, bulkheads, ures or withdrawal e of past alteration stream pattern and ured. Withdrawals, if bservable affect on	Between 30-60% of Impacted by dredgi levees, culverts, ni armor, drop structu structures. Evidence may be present, but stability are begin Withdrawats, if pres observable affect o	ing, dams, dikes, prap, bulkheads, res or withdrawal s of past alteration stream pattern and ning to recover. enf, may have an on flow, but no	Between 60-90% of impacted by dredg levees, culverts, ri armor, drop structu structures. Evidence is present, and str stability are no Withdrawals. If pres observable affect habilat o	ing, dams, dikes, prap, bulkheads, ires or withdrawal e of past alteration eam pattern and it recovering, sent, may have an on both flow and	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, cuiverts, hiptop, buikheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severel loss of flow and cause little to no habitat or biota.	AV
SCORE	5			3	1.	2		1	4.00
otes: Evidenc	ce of past alterations and			STREAM CON					





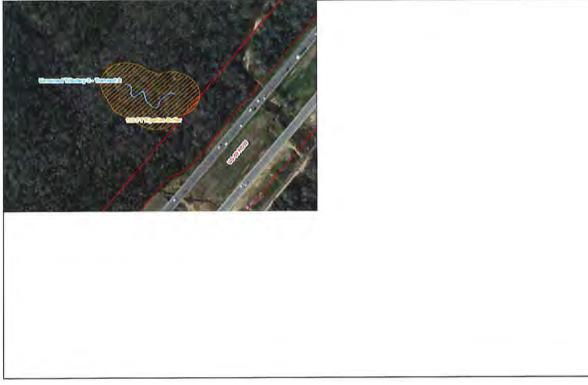
Project #	Applicant	1.1 Mar. 2	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description	
					12040103	3/21/2018	2	Midstream	
CHANNE	LALTERATION: Stream crossin	ngs, riprap, concret	e, gablons, or co	ncrete blocks, straig	htening of chann	el, channelization,	embankments, s	poil piles, constrictions, livestock	
	Optimal	otimal	Marg	inal	Po	or	Severe		
Channel Alteration	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverkr, fiprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of impacted by dredg levees, culverts, r armor, drop struct structures. Evidenc may be present, but stability have recove present, have no of flo	ing, dams, dikes, iprap, bulkheads, irres or withdrawal e of past alteration stream pattern and red. Withdrawals, it servable affect on	Between 30-60% of Impacted by dredgi levees, culverts, n' armor, drop structu structures. Evidence may be present, but stability are begin Withdrawals, if pres observable affect o	ing, dams, dikes, prap, bulkheads, res or withdrawal e of past alteration stream pattern and ning to recover. ent, may have an on flow, but no	Between 60-90% Impacted by dredg levees, cuiverts, r armor, drop struct structures. Evidence is present, and st stability are no Withdrawals, if pre observable affect habitat of	ging, dams, dikes, iprap, bulkheada, ures or withdrawal e of past alteration ream pattern and bit recovering, sent, may have an on both flow and	Botween 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, fiprap, buikheads, 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 blota.	AV
SCORE	5	4		3	S. 1. K. S. M	2	2	1	5.00
lotes: No m	an-made channel alteratior							nature.	
	REACH	CONDITION I	NDEX and S	TREAM CON	DITION UNI	TS FOR THIS	REACH		
								E CONDITION INDEX (CI) >>	3.55





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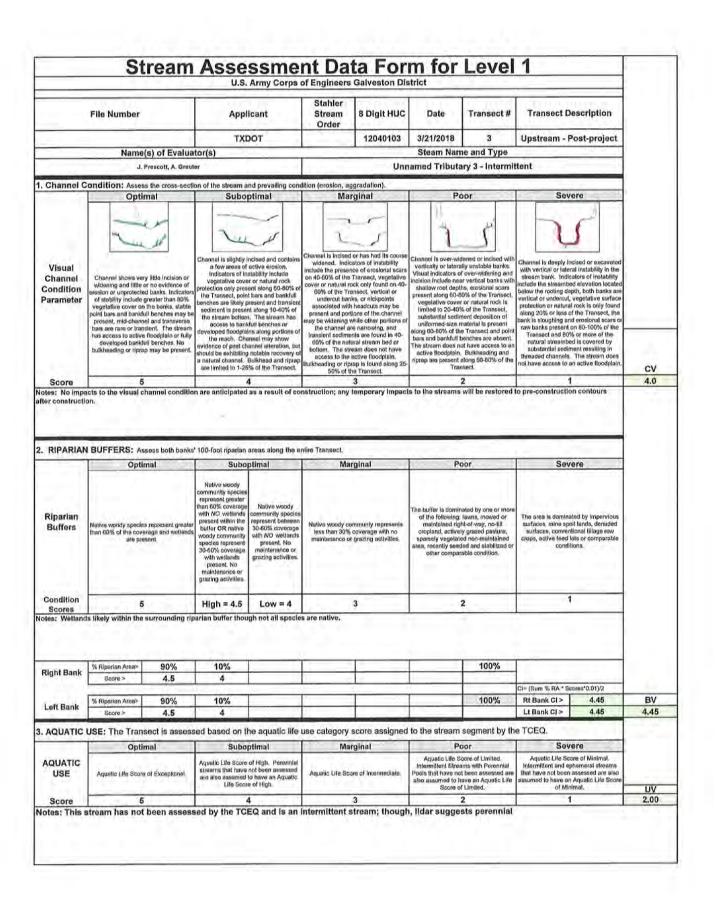
Project #	Applicant		Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description	
				12040103 3/21/2018 2				Midstream - Post-project	
. CHANNEL	L ALTERATION: Stream crossin	igs, riprap, concr	ete, gabions, or co	ncrete blocks, straij	ghtening of chanr	el, channelization	, embankments, s	poil piles, constrictions, livestock	
	Optimal	Sub	optimal	Marg	ginal	Po	oor	Severe	
Channel Alteration	Channelization, dredging, alteration or hardening absent. Stream has unaitered pattern or has normalized. No dams, dikas, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures willin the Transect.	impacted by dre levees, culverts armor, drop stru- structures. Evide may be present, t stability have reco present, have no	Suboptimal Less than 30% of the Transect is mpacted by dredging, dams, dikea, twees, culverts, fripra, builkneads, urnor, drop structures or yhihdrawai ructures. Evidence of past alteration billy have recovered. Withdrawais, if esent, have no observable affect on flow.		of the Transect Is ging, dams, dikes, iprap, bulkheads, ures or withdrawal to of past alteration stream pattern and nning to recover. sonl, may have an at on flow, but no on habitat or biots.	impacted by dred levees, culverts, armor, drop struct structures. Eviden- is present, and s stability are n Withdrawals, if pre- observable affec	of the Transect is ging, dams, dikes, riprap, bulkheads, ures or withdrawal ce of past alteration ream pattern and tot recovering. seent, may have an t on both flow and or blota.	Between 90-100% of the Transact is impacted by dredging, dams, dikes, levees, suiveris, fiprop, 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.	AV
SCORE	5	B	4	3	3	1	2	1	5.00
lotes: No m	nan-made channel alteration			g occurs when				nature.	
				STREAM GON		13 FOR THE	SKLAGH		



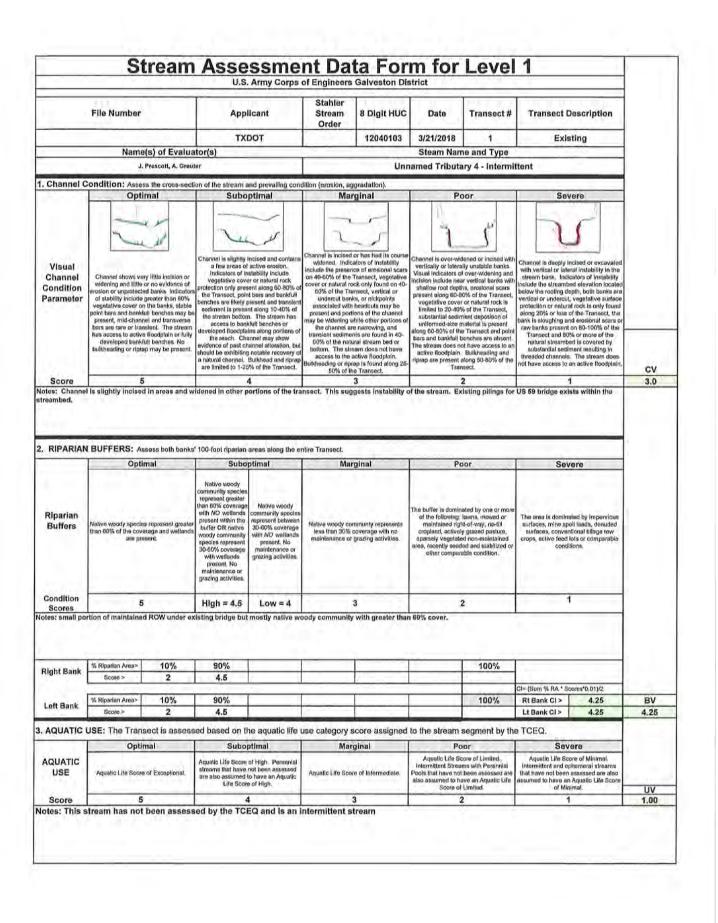
	Transect Description	Transect #	Date	8 Digit HUC	Stahler Stream	icant	Appl	ile Number	
-	Upstream - Existing	3	3/21/2018	12040103	Order	007	тхс		
	opstream - Existing	and the second se	Steam Nam	12040103				Name(s) of Evalua	
	tent	ry 3 - Intermit	amed Tributa	Unn			nr	J. Prescott, A. Greu	
								dition: Assess the cross-sect	Channel C
-	Severe	oor	Po	ginal	Mar	ptimal	Subo	Optimal	
	J	5	1	Channel la Incised or has had its course		1	Lu		
ne ý led are cce nd ne te	Channel is deeply inclued or excavated with vortical or lateral instability in the shream bank. Indicators of instability include the streambed selvation located leave the rooting depth, tobt banks are vertical or undercut, vegetalitive surface protection or nativeal rock is only found along 20% or less of the Transect, the bank is sloughing and croational scars or raw banks present on 80-100% of the natural streambed is covered by substantial sediment rosulting in threaded channels. The stream dees net have access to an active floodplain	I over-widening and r vertical banks with s, erosional scars 0% of the Transect, for natural rock is 6 of the Transect, intert deposition of naterial is present 9 Transect and point 9 Transect and point 10 tave access to an Buikheading and along 60-80% of the sect.	vertically or lateral Visual inficiators of Inclaton include new shallow root dapti present along 60-80 wegatalive cover limited to 20-40% wubatantial sedim unformed-size m along 60-80% of the bars and bankfull b The sinsen dees no motive floodplain, riprap are present a Tran	Idea of instability se of eroalonal scars ransed, vegetative ix only found on 40- neet, verificat or neet, verificat or neet, verificat or ne of the channet hile other portions of narrowing, and is are found in 40- ral stream bad or am does not have cive floodplain.	widened. Indice include the present on 40-60% of the T cover or natural roc 60% of the Trai undercul bank present and porti- may be widening wi the channel are transiont sedimer 60% of the natu- boltom. The stre access to the a	stability include or or natural rock and along 00-80% of t bars and bankful treament and translent nt along 10-40% of h. The stream has Attil benches or riss along portions of Mill benches or riss along portions of med may show annel atterniton, but notable recovery of Bulkhead and riprap % of the Transecl.	a few areas of Indicatore of Ina vegetative cove protection only press the Transect, point benches are likely p sediment is preser the stream bottom access to bank developed Rocdplai the reach. Cha avidence of past ch should be exhibiting a natural channel. E are limited to 1-280	Channel shows very lillie incluion or videining and little or no avidence of solon or unprotected banks, indicators of stability include greater than 80% optativic oover on the banks, stable int bars and bankfull benches may be preent, mid-bannel and transverse are are rare or transient. The alream as access to active fleody flow flow flow developed bankfull banches. No uikheading or riprap may be present.	Visual Channel Condition Parameter
CV		2	2	3		4	4	5	Score
CV 4.0	1 Severe	por	Po	ginal	lire Transect.		100-foot riparian a Subor	UFFERS: Assess bolh banks Optimal	otes: Channel
CV 4.0		ated by one or more lawns, mowed or It-ot-way, no-till y grazed pasture, id non-maintained	The builter is domina of the following: maintained righ croptand, actively sparsely vegetate area, recently seed		lire Transect. Mary Native woody con less than 30% c		Subop Native woody community species represent greater han 60% coverage with AO watlands present within the buffer OR native woody community species represent 30.60% coverage with wetlands present.No meintenpace or		-
CV 4.0	Severe The area is dominated by impervious surfaces, mine spoil lands, denuded surfacea, conventional bilisge row crops, active feed lots or comparable conditions.	atted by one or more lawns, mowed or hell-way, no till y grazed pastitue, d non-maintained ed and stabilized or able condition.	The buffer is domina of the following: maintained righ cropiand, actively sparsely vegetate area, recently seed other compara	ginal muuty represents everage with no precing activities,	tire Transect. Mary Native woody con less than 30% c maintenance or p	Native woody community species represent between 30-00% soverage with NO wellende present. No maintenance or grazing activities.	Subor Nalive woody community species represent greater han 60% coverage with XO walands present within the buffer OR native woody coverage with wellands present. No majintonance or grazing activities	Optimal Nive veody spacies represent greater an 60% of the coverage and vedlands are present.	. RIPARIAN Riparian Buffers
CV 4.0	Severe The area is dominated by impervious surfaces, mine spoil lands, denuded surfaces, conventional bilage row crops, active leed lots or comparable	ated by one or more lawns, mowed or ni-ol-way, no till y grazed pasture, d non-maintained ed and stabilized or	The buffer is domina of the following: maintained righ cropiand, actively sparsely vegetate area, recently seed other compara	ginal muuty represents soverage with no	tire Transect. Mary Native woody con less than 30% of maintenance of p	Native woody community species represent between 30-00% soverage with NO wellende present. No maintenance or grazing activities.	Subor Nalive woody community species represent greater with XO walands present Within the buffer OR native woody community species represent 30.40% coverage with wallands present. No maintenance or grazing activities. High = 4.5	Optimal New woody species represent greater on 60% of the coverage and wetlends	RIPARIAN Riparian Buffers Condition Scores
CV 4.0	Severe The area is dominated by impervious surfaces, mine spoil lands, denuded surfacea, conventional bilisge row crops, active feed lots or comparable conditions.	ated by one or more livens, mowed or i-led-way, no till y grazed pastule, et nort-maintained et and stabilized bile condition.	The buffer is domina of the following: maintained righ cropiand, actively sparsely vegetate area, recently seed other compara	ginal muuty represents everage with no precing activities,	tire Transect. Mary Native woody con less than 30% of maintenance of p	Native woody community species represent between 30-00% soverage with NO wellende present. No maintenance or grazing activities.	Subor Nalive woody community species represent greater with XO wetlands present Within the buffer OR native species represent with wetlands present. No meintenance or grazing activities. High = 4.5 arrian buffer thous	Optimal New woody species represent greater on 00% of the coverage and vetlends are present. 5 kely within the surrounding rip	Riparian Buffers Condition Scores
CV 4.0	Severe The area is dominated by impervious surfaces, mine spoil lands, donuded surfaces, conventional tillage row crops, active feed lots or comparable conditions.	ated by one or more liams, nowed or I-ol-way, no till yarzed pastula, di nor-maintained ed nod stabilized or able condition.	The buffer is domina of the following: maintained righ cropiand, actively sparsely vegetate area, recently seed other compara	ginal muuty represents everage with no precing activities,	tire Transect. Mary Native woody con less than 30% of maintenance of p	Native woody community species represent between 30-00% soverage with NO wellende present. No maintenance or grazing activities.	Subor Nalive woody community species represent greater with XO walands present Within the buffer OR native woody community species represent 30.40% coverage with wallands present. No maintenance or grazing activities. High = 4.5	Optimal New woody spacies represent greater an 60% of the coverage and vectorids are present.	RIPARIAN Riparian Buffers Condition Scores
CV 4.0	Severe The area is dominated by Impervious surfaces, mine spoil lands, donuded surfaces, conventional hillinger ow crops, active feed lots or comparable conditions. 1 Cl= (Sum % RA * Scores*0.01)/2	ated by one or more liams, nowed or I-ol-way, no till yarzed pastula, et nor-maintaihed et and stabilized or able condition.	The buffer is domina of the following: maintained righ cropiand, actively sparsely vegetate area, recently seed other compara	ginal muuty represents everage with no precing activities,	tire Transect. Mary Native woody con less than 30% of maintenance of p	Native woody community species represent between 30-00% soverage with NO wellende present. No maintenance or grazing activities.	Suboy Nalive woody community species represent greater present greater with AO wattands present within the buffer Of native woody community species represent ab d0% coverage with wattands present. No maintenance or grazing activities. High = 4.5 arian buffer thous 10% 4	Optimal Optima	Riparian Buffers Condition Scores otes: Wellands
CV 4.0	Severe The area is dominated by impervious surfaces, mine spoil lands, donuded surfaces, conventional tillage row crops, active feed lots or comparable conditions.	ated by one or more liams, nowed or I-ol-way, no till yarzed pastula, di nor-maintained ed nod stabilized or able condition.	The buffer is domina of the following: maintained righ cropiand, actively sparsely vegetate area, recently seed other compara	ginal muuty represents everage with no precing activities,	tire Transect. Mary Native woody con less than 30% of maintenance of p	Native woody community species represent between 30-00% soverage with NO wellende present. No maintenance or grazing activities.	Subor Nalive woody community species represent greater with AO wetlands present within the buffer OR native wordy community species represent 30 d0% coverage with wetlands present. No meintenance or grazing activities. High = 4,5 arian buffer thous	Optimal If you woody species represent greater are present.	Riparian Buffers Condition Scores
CV 4.0	Severe The area is dominated by impervious surfaces, mine spoil lands, donuded surfaces, conventional tillage row crops, active feed lots or comparable conditions. I Cl= (Sum % RA* Scores*0.01)/2 Rt Bank CI > 4.45 Lt Bank CI > 4.45	ated by one or more liven, nowed or it-ol-way, no till y grazed pastule, d nor-maintained ed and stabilized or able condition.	The buffer is domina of the following: maintained righ cropiand, actively spareoly vogeted area, recently send other compara	ginal munty represents swarage with no prazing activities. 3	lire Transeci. Mar Native woody con less than 30% or maintenance or maintenance or are native.	Native woody community species represent between 30-60% coverage with NO wellenge present. No mulnicenance or grazing activities.	Suboy Native woody community species represent greater present greater with AO watants present within the buffer OR native woody community species represent 30.80% coverage with wellands present. No maintenance or grazing activities. High = 4,5 arian buffer though 10% 4	Optimal Optima	RIPARIAN Riparian Buffers Condition Scores stes: Wetlands Right Bank Left Bank
CV 4.0	Severe The area is dominated by impervious surfaces, mine spoil lands, donuded surfaces, conventional tillage row crops, active feed lots or comparable conditions. I Cl= (Sum % RA* Scores*0.01)/2 Rt Bank CI > 4.45 Lt Bank CI > 4.45	ated by one or more livens, mowed or it-ol-way, no till y grazed pastule, d nort-maintained ed and stabilized or abile condition.	The buffer is domina of the following: maintained righ cropiand, actively spareoly vogeted area, recently send other compara	ginal mouty represents overage with no pracing activities. 3 core assigned	lire Transect. Mar Native woody con less than 30% or meintenance or are native.	Native woody community species represent between 30-60% coverage with AC wellands present. No misinternatics or grazing activities.	Suboy Native woody community species represent greater present greater with AO watants present within the buffer OR native woody community species represent 30.80% coverage with wellands present. No maintenance or grazing activities. High = 4,5 arian buffer though 10% 4	Optimal New woody species represent greater and 00% of the coverage and wetlends are present. 5 Kely within the surrounding rip (Riparian Area> 90% Score > 4.5 (Riparian Area> 90% Score > 4.5	RIPARIAN Riparian Buffers Condition Scores stes: Wetland: Right Bank Left Bank
CV 4.0 8 8 8 8 8 8 8	Severe The area is dominated by impervious surfaces, mine spoil lands, donuded surfaces, conventional tillage row crops, active feed lots or comparable conditions. Cl= (Suin % FA* Scores*0.01)/2 Rt Bank Cl> 4.45 Lt Bank Cl> 4.45	ated by one or more liver, mowed or it-ol-way, no till y grazed pastula, d nor-maintained et and stabilized or and stabilized able condition.	The buffer is domina of the following: maintained righ cropiand, actively spareby vogetaed area, recently spareby vogetaed other compara other compara	ginal mouty represents overage with no practing activities. 3 core assigned pinal	lire Transect. Mar Native woody con less than 30% or meintenance or are native.	Native woody community species represent between 30-60% coverage with NO wellende present. No mulnicenance or grazing activities. Low = 4 gh not all species the aquatic life to ptimal of High. Perenniat not been assessed	Subor Nalive woody community species represent greater with AO weldnass present within the buffer OR native woody community species represent 30.60% coverage with wellands present. No meintenance or grazing activities. High = 4,5 arian buffer thous 10% 4 10% 4 ed based on th	Optimal If ye woody species represent greater If ye woody species represent greater If ye woody species represent If ye	. RIPARIAN Riparian Buffers Condition Scores otes: Wetlands Right Bank Left Bank

Project #	Applicant	1.	Locality	Cowardin Class.	HUC	Date	Transect#	Transect Description	
22.20	in the second			12040103 3/21/2		3/21/2018	3	Upstream	
. CHANNEI	ALTERATION: Stream crossin	gs, riprap, concret	e, gabions, or co	ncrete blocks, strai	ghtening of chann	el, channelization,	embankments, s	poil piles, constrictions, livestock	
	Optimal	Subo	otimal	Marg	jinal	Po	or	Severe	
Channel Alteration	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, iprep, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of impacted by dredg levees, culverts, r armor, drop struct structures. Evidence may be present, but stability have recove present, have no of flo	ing, dams, dikes, iprap, bulkheads, ures or withdrawal e of past alteration stream pattern and ured. Withdrawals, i oservable affect on	levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is may be present, but stream pattern and stability are beginning to recover.		Between 60-90% Impacted by dredy levees, culverts, r armor, drop struct structures. Evidence is present, and st stability are n Withdrawals, if pre observable affect habitat	ging, dams, dikes, iprap, bulkheads, ures or withdrawal e of past alteration ream pattern and ot recovering, sent, may have an on both flow and	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, cuiverts, fiprap, buikheads, 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.	AV
SCORE	5	4	11.5 m	3	3		2	1	5.00
Notes: No m	an-made channel alteration	is along this r	each. Poolin	g occurs whe	n low surface	runoff due to	intermittent	nature.	
	REACH (CONDITION I	NDEX and S	STREAM CON	IDITION UNI	TS FOR THIS	S REACH		
and the second second	A REAL PROPERTY AND A REAL PROPERTY AND A	States of the local division of the local di	A CONTRACTOR OF A CONTRACT			and the second		E CONDITION INDEX (CI) >>	3.86





	3	tream Im	ipaci A	ssessm	ent For	in Page	4	-	
Project#	Applicant		Locality	Cowardin Class.	нис	Date	Transpot #	Transect Description	
					12040103	3/21/2018	3	Upstream - Post-project	
CHANNEL	LALTERATION: Stream crossin	gs, riprap, concrete	, gabions, or co	ncrete blocks, strak	phtening of chann	el, channelization.	, embankments, s	poil piles, constrictions, livestock	
	Optimal	Subop	timal	Marg	jinal	Po	nor	Severe	
Channel Alteration	Channelization, dredging, alteration or hardening absent. Siream has unaltered pattern or has normalized. No dams, dikes, levees, culverki, riprap, buikheada, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of impacted by dredgt levers, culverts, ri amor, drop structuu atructures. Evidence may be present, but s stability have recover present, have no ob flow	ng, dams, dikes, orap, buikheads, res or withdrawal of past alteration stream pattern and ed. Withdrawals, if servable affect on	Marginal Between 30-60% of the Transect is impacted by desiging, dams, dikes, løvees, culverts, firpap, buikheads, armor, drop suivchras or vilhefaval structures. Evidence of past alteration may be present, hub sides map patiente and stability are beginning to recover. Withdrawals if present, may have an observable affect on hubita to ribita		Batween 60-90% of the Transoct is impacted by dredging, dams, dikes, levens, culveris, fitrap, builheads, armor, diop structures or villedrawil structures. Evidence of past aleration is present, and stream pattern and skubility are not necovering. Withdrawails, it present, may have an observable affect on both flow and habilitet or blots.		Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, fiprap, buikheads, armor, drop structures or wilhdrawal structures. Withdrawals, if present, are large enough to have severe toss of flow and cause little to no habitat or blots.	AV
SCORE	5	4		3			2	7	5.00
lotes: No m	an-made channel alteration	s along this re	ach. Poolin	g occurs when	n low surface	runoff due to	o Intermittent	nature.	
	REACH	CONDITION IN	IDEX and S	TREAM CON	IDITION UNI	TS FOR THIS	S REACH		
								E CONDITION INDEX (CI) >>	3.86



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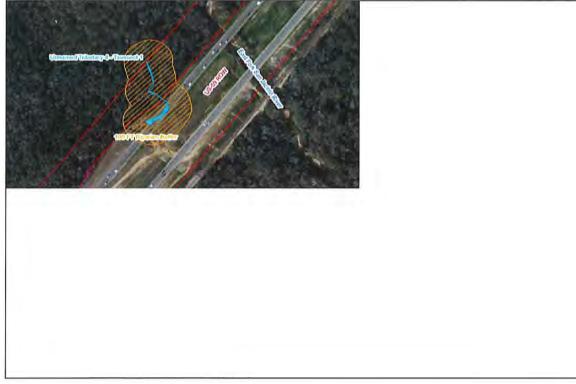
Project #	Applicant	1.	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description	
					12040103	3/21/2018	1	Existing	
. CHANNEL	ALTERATION: Stream crossin	ngs, riprap, concret	e, gabions, or co	ncrete blocks, straig	phtening of chann	el, channelization	embankments, s	poll piles, constrictions, livestock	
	Optimal	Subor	otimal	Marg	inal	Po	or	Severe	
Channel Alteration		Less than 30% of impacted by dredg levees, culverts, n armor, drop structu structures. Evidenc may be present, but stability have recove present, have no of flor	ing, dams, dikes, iprap, bulkheads, irres or withdrawal e of past alteration stream pattern and red. Withdrawals, if pservable affect on	Between 30-60% impacted by dredg levees, culverts, ri armor, drop structu structures. Evidence may be present, but stability are begin Withdrawals, if pres observable affect of baservable affect of	ing, dams, dikes, prap, bulkheads, ares or withdrawal e of past alteration stream pattern and uning to recover. sent, may have an t on flow, but no	Between 60-90% of the Transect is impacted by dredging, dams, dikes, armor, drop atructures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, i present, may have an observable affect on both flow and habilat or biola.		Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, cuiverts, riprop, bulkheads, armor, drop structures or withdrawals structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.	AV
SCORE	5	4		3			2	1	4.00
lotes: Impac	cted by pilings of US-59 bri	dge.							
	REACH	CONDITION	NDEX and S	TREAM CON	DITION UNI	TS FOR THI	S REACH		_



	File Number		Applicant		Stahler Stream 8 Digit HUC Date Transect Order		Transect #	Transect Description		
_		TX	оот	Order	12040103	3/21/2018	1	Post-pr	oject	
	Name(s) of Eval	uator(s)			1.121-1010	Steam Nan	ne and Type			
	J. Prescott, A. G	outer			Unr	amed Tributa	ary 4 - Intermi	ttent		
, Channel C	Condition: Assess the cross-s Optimal	and the second se	nd prevailing cond ptimal		ggradation). rginal	P	oor	Sev	ere	
	17	Tu	benches are likely present and bankun benches are likely present and iranient sedimont is present along 10-40% of the stream bottom. The stream has access to bankfull benches or devidence flexibilities along betches of		2		5	V		
Visual Channel Condition Parameter	Channel shows very little incision widening and little or no avidence resion or upprotected banks. Indica approtected banks. Indica vegetative corer on the banks, stat present, mid-channel and transver bars are rare or transien. The size has access to active floodplain or the developed bankful benches. No buildheading or riprap may be prese	a frev areas of indicators of in vegetative cove protection only pre- benches are likely sedimont is press developed floodpla libe reach. Chi access to bani developed floodpla			or has had its course sators of instability tice of encoisonal scars Transect, vegetative eck only found on 40- ansect, vertical or key or nickpolnts in headcuts may be itoms of the chuonel while other portions of ree narrowing, and mits are found in 40- ural stream bed or eaam does not have active (icodplain.	Channel is over-widened or incised with vertically or interally unstable backs. Visual indicators of aver-widening and incialon include near vertical banks with abailow root depths, ensional scars present along 60-80% of the Trensect, vegetative cover or natural rock is limited to 20-40% of the Trensect, aubstintial sediment deposition of uniformed-size materials present along 60-80% of the Trensect and point bers and bankful benches are absent. The sizeam does not have access to an active floodplen. Butkheeding and		rinniect and dow of more of the		
	5	are limited to 1-25	% of the Transect	50% of th	rap is found along 25- to Transect. 3	Trai	along 50-80% of the nsect	not have access to a		CV 3.0
lter construct)	acts to the visual channel cond on.			and a strength	temporary impact	a to the atteams	will be restored	o pre-constructio	in contours	
otes: No Imp: Iter constructi	acts to the visual channel cond	ks' 100-fool riparian Subo Native voody		ilíre Transect.	temporary impact		will be restored	Sev		
otes: No Imp: Iter constructi	nots to the visual channel cond on. NBUFFERS: Assess both ba	ks' 100-fool riparian Subo Native voody community species represent greater than 60% coverage with NO wettands	areas along the er ptimal	Ilire Transect. Mai Nalive woody co Jess than 30%		Pe of the following: mainlained rig cropland, active sparsely vigetat			ere ted by Imparvious il Janda, denuded übnet füllinger row to ar oromparable	
Riparian Buffers	N BUFFERS: Assess both ba Optimal Native woody species represent gree Inan 60% of the coverage and wella	kst 100-fool riparian Subo Native woody community species represent greater than 60% coverage with NO wetlands buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or	areas along the er ptimal Naiwe woody community spacies represent between 30-80% coverage with AO walands present. No maintenance or	Nalive woody co less than 30% maintenance or	rginal mmunly represents coverage with no	Pe The buffer is domin of the following: maintained rig copland, active sparsely vegetat arca, recently sees other compar	boor lavna, mowed or haofway, no-lill y grazed pekire, ed non-maintained de am d stabilized or	Sevi The area is domina surfaces, mine apo surfaces, convent crops, active feed it	ere ted by Imparvious il Janda, denuded Uonat Illinga row ota or comparable Ions.	
ctes: No Impr fter constructi . RIPARIAN Buffers Condition Scores	Native woody speales represent greater and wells and by the overlap and wells are present.	ks' 100-fool riparian Subo Native voody community species represent greater than 60% coverage with NO wetlands buffer OR native buffer OR native woody community specier represent 30-60% coverage with wetlands present, No maintenance or grazing activities. High = 4.5	Preas along the or ptimal Native woody community spacies represent between 30-00% coverage with NO waitands oreact. No waitand	Nallve woody co Jess than 30% maintenance or	rginal mmunly represents coverage with no grazing activities.	Pe of the following: maintained rig croptand, active sparsely vagatat arra, recently sees other compar	boor hated by one or more lawns, mowed or hat-of-way, no-till y grazed pailure, de ano-mainained de ano-mainained de ano-mainained abai condition.	Sevi The area is domina surfaces, mine apo surfaces, conven crops, active feed in conditi	ere ted by Imparvious il Janda, denuded Uonat Illinga row ota or comparable Ions.	
Condition Scores ROW will	N BUFFERS: Assess both bar Optimal Native woody species represent gro than 60% of the coverage and wells are present. 5 I be cloared as a result of come % Riparian Area> 100%	ks' 100-fool riparian Subo Native voody community species represent greater than 60% coverage with NO wetlands buffer OR native buffer OR native woody community specier represent 30-60% coverage with wetlands present, No maintenance or grazing activities. High = 4.5	Preas along the or ptimal Native woody community spacies represent between 30-00% coverage with NO waitands oreact. No waitand	Nallve woody co Jess than 30% maintenance or	rginal mmunly represents coverage with no grazing activities.	Pe of the following: maintained rig croptand, active sparsely vagatat arra, recently sees other compar	boor hated by one or more lawns, mowed or hat-of-way, no-till y grazed pailure, de ano-mainained de ano-mainained de ano-mainained abai condition.	Sevi The area is domina surfaces, mine apo surfaces, conven crops, active feed in conditi	ere ted by Imparvious il Janda, denuded Uonat Illinga row ota or comparable Ions.	
Riparian Buffers	N BUFFERS: Assess both bar Optimal Native woody species represent gree than 60% of the coverage and wells are present. 5	ks' 100-fool riparian Subo Native voody community species represent greater than 60% coverage with NO wetlands buffer OR native buffer OR native woody community specier represent 30-60% coverage with wetlands present, No maintenance or grazing activities. High = 4.5	Preas along the or ptimal Native woody community spacies represent between 30-00% coverage with NO waitands oreact. No waitand	Nallve woody co Jess than 30% maintenance or	rginal mmunly represents coverage with no grazing activities.	Pe of the following: maintained rig croptand, active sparsely vagatat arra, recently sees other compar	boor laws, mowed or heorway, no-till by grazed peakure, de ono-markalained and stabilized or able condition.	Sevi The area is domina surfaces, mine apo surfaces, conven crops, active feed in conditi	ere ted by Imparvious Il Janda, denuided uionat Ullinge row ous or comparable ions.	
Condition	Native woody species represent greaters to the visual channel cond on. Native woody species represent greaters than 00% of the coverage and wella and present. 5 If be cleared as a result of cons % Riparian Area> 100%	ks' 100-fool riparian Subo Native voody community species represent greater than 60% coverage with NO wetlands buffer OR native buffer OR native woody community specier represent 30-60% coverage with wetlands present, No maintenance or grazing activities. High = 4.5	Preas along the or ptimal Native woody community spacies represent between 30-00% coverage with NO waitands oreact. No waitand	Nallve woody co Jess than 30% maintenance or	rginal mmunly represents coverage with no grazing activities.	Pe of the following: maintained rig croptand, active sparsely vagatat arra, recently sees other compar	aated by one or more lawns, mowed or hoof way, notilit y grazed pektire, ed non-maintained ea mal stabilized or able condition. 2 2 US-59 bridge.	Sevi The area is domina surfaces, mine spo surfaces, convent coops, active feed to condit coops, active feed to condit coops, active feed to condit Cl= (Sum % RA * Sc Rt Bank Cl >	ere ted by Imparvioue ill lands, denuded lonat lillinger row do or comparable lons.	BV 2.00
Riparian Buffers Condition Scores otes: ROW wil Right Bank	Native woody species represent gree than 60% of spe	ks' 100-fool riparian Subo Native woody community species represent greater than 60% coverage with NO wetlands buffer OR native society coverage with woody community species represent 30-60% coverage with wetlands present. No maintenance or greating activities. High = 4.5 ruction; therefore,	Preas along the er ptimal Native woody community species represent between 30-60% coverage with AO wetlands present. Ao wetlands present and an an an an an an an an an an maintenance or grazing activities, Low = 4 the riparian buffe	Native woody co Jess than 30% maintenance or	rginal mmunly represents coverage with no grazing activities. 3 ated by mainteines	Pe The buffer is domin of the following: mainlained rig cropiand, active sparsely viegotat area, recomper other comper other comper	Auted by one or more lawns, mowed or heof-way, no-lill y grazed padlure, ed non-maintained able condition.	Sevi The area is domina surfaces, mine apo surfaces, conven crops, active feed is condition cond	ere ted by Imparvious Il Janda, denuided uionat Ullinge row ous or comparable ions.	BV 2.00
Riparian Buffers Condition Scores otes: ROW will Right Bank	NBUFFERS: Assess both bar Optimal Native woody species represent gree than 60% of the coverage and wells are present. 5 If be cleared as a result of cons % Riparian Area> 100% Score > 2 % Riparian Area> 100% Score > 2 USE: The Transect is asse	ks' 100-fool riparian Subo Native woody community spacies represent greater than 60% coverage with AO wetlands buffer OR native buffer OR native society of the second society of the second second second maintenance or grazing activities. High = 4.5 ruction; therefore,	breas along the or ptimal Malive woody community species represent between 34-00% coverage with AO wellands present No maintenance or grazing activities, Low = 4 the riparian buffe	Nalive woody co Jess than 30% maintenance or	rginal mmunty represents coverage with no grazing activities. 3 ated by maintaines by	Per of the following: maintained groups cropiand, active sparsety vapilate area, recently and other compare other compare other compare to the stream	asted by one or more tawns, mowed or heof-way, no-till y grazed pediure, ed non-maintained and stabilized or nable condition. 2 105-59 birldge. 100% 100% segment by th	Sevi The area is domina surfaces, mine apo surfaces, caven crops, active feed is condition condi	ere ted by Imparvious il Ianda, denuded tionel tillage row ote or comparable lons. orna*0.01//2 2.00 2.00	
Riparian Buffers Condition Scores otes: ROW wil Right Bank	Native woody species represent gree than 60% of spe	ks' 100-fool riparian Subo Native woody community species ropresent greater than 60% coverage prosent within the buffer OR native woody community species represent 30-60% coverage with wellands present. No maintenance or grazing activities. High = 4.5 ruction; therefore, sseed based on 10 Subo Aquatic Life Score	Preas along the er ptimal Native woody community species represent between 36-60% coverage with AO wallands present AO wallands present AO wallands present AO wallands present AO wallands present AO wallands present and a present Low = 4 the riparian buffe the aquatic life to ptimal of High, Perennial not been assessed	Native woody co Jess than 30% maintenance or e will be domina	rginal mmunly represents coverage with no grazing activities. 3 ated by mainteines	Period Contract of the following: maintained right of the following: maintained right of the following: maintained right of the following corpland, active sparsety vogetate area, recently of the sparsety vogetate other compare other compare other compare other compare other compare other compare to the stream Pous that have no place assumed to h	Auted by one or more lawns, mowed or heof-way, no-lill y grazed padlure, ed non-maintained able condition.	Sevi The area is domina surfaces, mine apo surfaces, conven crops, active feed is condition cond	ere ted by Imparvious il Ianda, denuded tionel tillage row ota or comparable lons. orea*0.011/2 2.00 2.00 2.00 ere ere ere finational assessed are also Aquatic Life Score	

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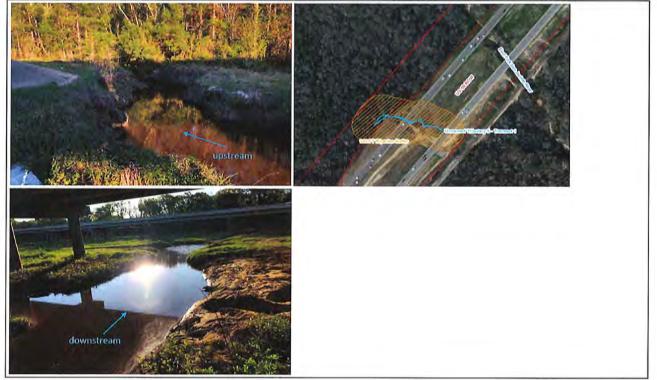
Project #	Applicant		Locality	Cowardin Class.	HUC	Date	Transect#	Transect Description	
	S. Service Service				12040103	3/21/2018	1	Post-project	
. CHANNEL	ALTERATION: Stream crossin	gs, riprap, concret	e, gabions, or cor	crete blocks, straig	phtening of chann	el, channelization.	embankments, s	poil piles, constrictions, livestock	
	Optimal	Subor	otimal	Marg	inal	Po	or	Severe	
Channel Alteration	Alteration dame dises invess cultures forem standards Evidence of part alteration		jing, dams, dikes, iprap, bulkheads, ures or withdrawal e of past alteration stream pattern and ured. Withdrawals, if pservable affect on	Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, fiprap, bulkheads, armor, drop structures or wilhdrawal structures. Evidence of past alteration much between others and the structures and the struct		Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, cuiverts, riprap, buikheads, samor, drop structures or wilhdrawal structures. Evidence of past alteration is present, and stream pattorn and stability are not recovering. Withdrawals, i 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, cuiverts, 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 blota.	AV
SCORE			3		3	2	1	4.00	
	5 cted by pilings of US-59 bri			3			2	1	
	REACH	CONDITION	NDEX and S	TREAM CON	DITION UNI	TS FOR THIS	REACH		

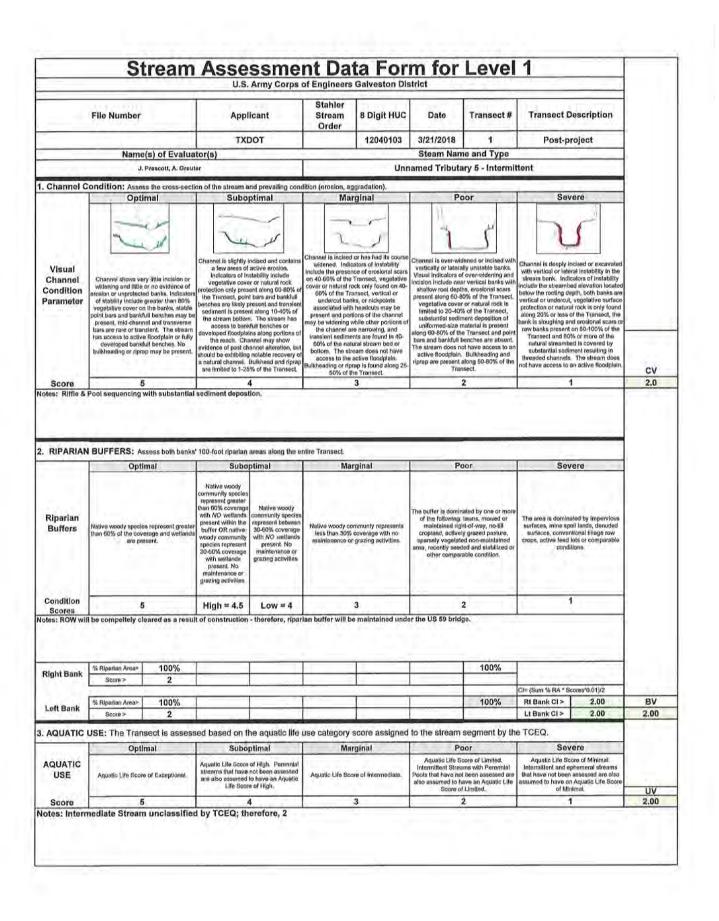


	File Number		An-1	licant	Stahler Stream	8 Diale Lillo	Date	Tennerati	Transier	Description	
_	File Number				Order	8 Digit HUC	Date	Transect #	Iransect	Description	
	Namala	ofEvolue		DOT		12040103	3/21/2018	1	Exi	sting	
		of Evalua				Unn	amed Tributa	ne and Type ary 5 - Intermi	ttent		
. Channel (Condition: Assess U	he cross-section	on of the stream a	and prevailing conc	lillon (erosion, ac						
	Optima			ptimal		rginal	Pe	nor	Se	vere	
	17	1	Lu	>	2	55	ĩ	5	2	5	
Visual Channel Condition Parameter	Channel shows very til widening and tillte or n ieroeino ru noptotetet bi of stability include gree vegstative cover on the point bara and bankfull b presen, mid-channet a bara are rane of iranslan has access to active floe developed bankfull b buikheading or riprap m	o evidence of anks. Indicators ater than 80% banks, stable wochas may be and transverse it. The stream odplain or fully renches. No	a few areas of Indicators of in vegetative cove protection only pres the Transect, poin benches are likely r sediment is prese the stream botton access to bani developed floodplas the teach. Ch evidence of past of should be exhibiting a natural channel.	Incised and contains active mostor. stability include or or natural rock ent along 60-80% of it bars end bankfuit nationg 10-40% of not annel 10-40% of ins atong portions of annel may show annel alteration, but p totable recovery of Butkhead and riprap Stuck of the Transect.	widened. India include the presen on 40-60% of the cover of natural re 60% of the Tra undercut ban associated with present and port may be widening w the channel ar transient sedime 60% of the natu bottom. The str access to the Bulkheading or fipe	or has had its course actors of instability too of erosional scare Transect, vegletative ook only found on 40- naset, verifical or ka, or nickpoints headcuits may be tions of the channel while other portions of the channel with other portions of the antroving, and mis are found in 40- main dure model or asom does not have active ficeotplain. Star Transect	vertically or latera Visual Indicators inclaion Include nea shallow root depti present along 00-8 vegetative cover limited to 20.400 substantial sedin uniformed-size m along 00-80% of the bars and bankfult The stream does no active floodplain, fiprap are present a	dened or inclued will illy unstable banks, forwer-videning and ar vertical banks with ns, erosional scars 6% of the Transect, of the Transect, of the Transect of the Transect and position of a flat present a Transect and point penches are absent. I have access to an Builtheeding and blave docess to the sect.	with vertical or init stream bank. Ind include the stream below the rooting of vertical or undorcu protection or natur along 20% or less tank is aloughing a raw banks presen Transect and 80 natural streamt substantial soci threaded channel	Incised or excavated oral instability in the lators of instability sed elevation located eph. both banks are eph. both banks are in cock is only found of the Transect, the al rock is only found of the Transect, in on 80-100% of the _% or more of the do is covered by mont resulting in a. The sitesm does an active floodplain.	cv
Score	5			4	ou va en u	3		2		1	2.0
	Pool sequencing with NBUFFERS: Asses Optimal	is both banks'	100-foot riparian Subo		AND THE R. C.	rginal	Pc	por	Set	/ere	
	N BUFFERS: Asses	is both banks' I present greater e and wellands	100-foot riparian	areas along the er	Mar Native woody co less than 30%	rginal mmunly represents coverage with no grazing activities.	The buffer is domin of the following: maintained righ cropiand, activel	ated by one or more lawns, mowed or nI-of-way, no-till y grazed pasture, id non-maintained ed and stabilized er	The area is domin surfaces, mine sp surfaces, conve crops, solive feed	Atild by Impervious oil lands, denuded nitional linge row lots or comparable tions.	
RIPARIAN Riparian Buffers Condition	N BUFFERS: Asses Optimal Native woody species rej than 60% of the coverage	is both banks' I present greater e and wellands	100-foot riparian Subo Native woody commuly species represent yreater than 00% coverage wody coverage buffer OR native woody coverage buffer OR native woody coverage with wothands present. No maintonance or grading activities,	Anive woody community species represent between 3060% coverage with AO wetlands present. No maintenance or grazing activities.	Mar Native woody co less than 30% maintenance or	mmunity represents coverage with na grazing activities.	The buffer is domin of the following: maintained rig: cropiani, activel spansity vegetate share, recardly seed biher compar	ated by one or more lawns, mowed or ri-of-way, no-bil ygnazed pasture, el non-maintainai el and sitabilizad or able condition.	The area is demin surfaces, mine sp surfaces, conve crops, selve feed cond	ated by impervious oil lands, derudidd ntional tillage row lots or comparable	
RIPARIAN Riparian Buffers Condition Scores	N BUFFERS: Asses Optimal Native woody species (e) than 50% of the downage are present	ss both banks" I prosent greater e and wellands	100-foot riparian Subo Native woody commuly species represent yreater than 00% coverage buffer OR native woody coverage buffer OR native woody coverage with wothands present. No maintonance or graching autivities, High = 4.5	Areas along the er ptimat Nalive woody community species represent between 3060% coverage with AO wetlands present. No maintenance or grazing setivities.	Mar Native woody co less than 30% meintenence or	mimunity represents coverage with no grazing activities.	The buffer is domin of the following: maintained rig: cropiani, activel spansity vegetate share, recardly seed biher compar	ated by one or more lawns, mowed or nI-of-way, no-till y grazed pasture, id non-maintained ed and stabilized er	The area is demin surfaces, mine sp surfaces, conve crops, selve feed cond	ated by Impervious oil lands, denuded nilonal linage row lots or comparable tions.	
RIPARIAN RIparian Buffers Condition Scores oles: Under U	Native woody species rep than 60% of the coverage are present 5 IS-59 bridge for a port	ss both banks' I present areater t. Ilon of the atr	100-feot riparian Subo Native woody represent yreater than 00% coverage baffer OR native woody community species represent 30-60% coverage with watands present. No maintenance or grading activities. High = 4.5 earm, therefore v	Areas along the er ptimat Nalive woody community species represent between 3060% coverage with AO wetlands present. No maintenance or grazing setivities.	Mar Native woody co less than 30% meintenence or	mimunity represents coverage with no grazing activities.	The buffer is domin of the following: maintained rig: cropiani, activel spansity vegetate share, recardly seed biher compar	ated by one or more lawns, mowed or ri-of-way, no-bil ygnazed pasture, el non-maintainai el and sitabilizad or able condition.	The area is demin surfaces, mine sp surfaces, conve crops, selve feed cond	ated by Impervious oil lands, denuded nilonal linage row lots or comparable tions.	
RIPARIAN RIparian Buffers Condition Scores	NBUFFERS: Asses Optimal Native woody species rej than 60% of the coverage are present 5 IS-59 bridge for a port	is both banks" present greater and willands t llon of the str	100-foot riparian Subo Native woody community speciar represent yreater than 60% coverage with Wowlands present within the buffer OR native buffer OR native buffer OR native buffer OR native buffer or second species represent. Sofo% coverage with woulands present. No maintenance or grading activities, High = 4.5 earm, therefore v	Areas along the er ptimat Nalive woody community species represent between 3060% coverage with AO wetlands present. No maintenance or grazing setivities.	Mar Native woody co less than 30% meintenence or	mimunity represents coverage with no grazing activities.	The buffer is domin of the following: maintained rig: cropiani, activel spansity vegetate share, recardly seed biher compar	ated by one or more texns, moved or 1-of way, no-till y graced pasture, of nor-maintained and stabilized or bale condition.	The area is demin surfaces, mine sp surfaces, conve crops, selve feed cond	ated by Impervious oil lands, denuded fional Ullage row fots or comparable titiona.	
Riparian Buffers Condition Scores	N BUFFERS: Asses Optimal Native woody species (e) than 60% of the coverage are present than 50% of the coverage are present 5 19-59 bridge for a port % Ripartin Area> % Ripartin Area>	ss both banks' I present greater and wellands ilon of the str 80%	100-foot riparian Subo Native woody community species represent yreater than 00% coverage with VCI wailands present within the buffer OR native woody coverage species represent 30-60% coverage grachg activities, species represent 30-60% coverage grachg activities, High = 4.5 earn, therefore v 20% 3	Areas along the er ptimat Nalive woody community species represent between 3060% coverage with AO wetlands present. No maintenance or grazing setivities.	Mar Native woody co less than 30% meintenence or	mimunity represents coverage with no grazing activities.	The buffer is domin of the following: maintained rig: cropiani, activel spansity vegetate share, recardly seed biher compar	ated by one or more texns, moved or 1-of way, no-till y graced pasture, of nor-maintained and stabilized or bale condition.	The area is domin surfaces, mina s surfaces, carve crops, active feed cond cond Cl= (Sum % RA * S Rt Bank Cl >	ated by Impervious oil lands, denuded hional bilage row fots or comparable tions.	BV
RIPARIAN RIparian Buffers Condition Scores Tes: Under L Right Bank	N BUFFERS: Asses Optimal Native woody species rej than 60% of the coverage are present 5 IS-59 bridge for a port % Ripartian Area> Score >	ss both banks'	100-feet riparian Subo Native woody community species represent yreater than 00% coverage baffer OR native woody community species represent 30-60% coverage with wotinangs with wotinangs with wotinangs with wotinangs of the species present. No maintenance or grading activities, High = 4.5 earm, therefore v 20% 3	An alive woody community species represent between 3060% coverage with AO wellands present. A work of the maintenance or grazing activities.	Mar Native woody co less than 30% mointenence or maintenence or	mmunty represents coverage with no grazing activities. 3 3 trea cover).	The buffer is domin of the following: maintainset rig: cropiand, active sparenety vegetate area, recently and other compar	aled by one or more lawns, mowed or 1-of-way, no-till y spraced pasture, of nor-mainteined and stabilized or oble condition.	The area is domin surfaces, mina sy crops, active feed cops, activ	ated by Impervious oil lands, denused fiotal tillage row fots or comparable tilona.	BV 2.20
RIPARIAN RIparian Buffers Condition Scores Tes: Under L Right Bank	Najive woody species rej than 60% of the coverage are present 5 IS-59 bridge for a port % Ripartian Amaz Score > % Ripartian Amaz Score > USE: The Transco	ss both banks*	100-feet riparian Subo Native woody community species represent yreater than 00% coverage wody coverage wody coverage with watmass present. No present. No present	Anitive woody community species represent between 3060% coverage with AO wetlands present. No maintenance or grazing uctivities.	Mar Native woody co less than 30% maintanance or maintained (no	mmunty represents coverage with no grazing activities. 3 3 tree cover).	The buffer is domin of the following: maintained rig: cropiand, active sparsely vegetate area, record the other compart	ated by one or more lawns, mowed or the/way, no-till yaraed pasture, d nor-mainteined and stabilized or oble condition. 2 100% 100% segment by th	The area is domin surfaces, mine s surfaces, conve crops, active feed cond cond cond cond cond cond cond con	atia by impervious oil lands, denuded filonal tilege row fols or comparable tions.	
Riparian Buffers Condition Scores otes: Under U Right Bank Loft Bank	N BUFFERS: Asses Optimal Native woody species rej than 60% of the coverage are present 5 IS-59 bridge for a port % Ripartian Area> Score >	ss both banks*	100-feet riparian Subo Native woody community species represent yreater than 00% coverage baffer OR native woody community species represent 30-60% coverage with wotinangs with wotinangs with wotinangs with wotinangs of the species present. No maintenance or grading activities, High = 4.5 earm, therefore v 20% 3	Areas along the er ptimal Native woody community species represent between SAGOY coverage with AO wetlands present. No maintenance or grazing activities. Low = 4 egetation is more regetation is more ptimal	Mar Native woody co less than 30% maintanance or maintained (no	mmunty represents coverage with no grazing activities. 3 3 trea cover).	The buffer is domin of the following: maintained rig: cropiand, activel sparsely vegetate area, recordly compare other compare other compare to the stream is po Aquatic Life Sc	ated by one or more lawns, mowed or the/way, no-bill ypraced pasture, d nor-mainteined en and siabilized or eble condition.	The area is domin surfaces, mina s surfaces, carve crops, sclive feed cond Cl= (Sum % RA * S Rt Bank Cl > Lt Bank Cl > Lt Bank Cl > Set Cl= Q.	ated by Impervious oil lands, denuded hional Ullage row fots or comparable titions.	
Riparian Buffers Condition Scores otes: Under U Right Bank Loft Bank	Najive woody species rej than 60% of the coverage are present 5 IS-59 bridge for a port % Ripartian Amaz Score > % Ripartian Amaz Score > USE: The Transco	ss both banks*	100-feot riparian Subo Native woody represent yreater than 00% coverage body coverage wody coverage wody coverage wody coverage wody coverage with watands present. No maintenance or grading activities. High = 4.5 earm, therefore v 20% 3 20% 3 ed based on th Subo	areas slong the er ptimal Nalive woody community species represent between 3060% coverage with AO wetlands present. AO wetlands present. AO wetlands grazing activities. Low = 4 ogefation is more equation is more contained and a second contained and contained and contained and contained and contained contained and contained and contained and contained and contained contained and contained and	Mar Native woody co less than 30% maintanence or maintained (no isse category s Mar	mmunty represents coverage with no grazing activities. 3 3 tree cover).	The buffer is domin of the following: maintained rig: cropiand, activel sparsely vegetate area, record the other compari- other compari- pather compari- to the stream in Po- Aquatic Life sc Intermitten Strea- Posto assume to ta	aled by one or more levins, movied or 1-of way, no-till y graced pasture, d nor-mainteined and stabilized or bele condition.	The area is domin surfaces, mine sy ordge, conve erops, active feed cond cond cond cond cond cond cond con	atid by impervious oil lands, denuded hional tillage row fots or comparable tions. 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2.20
Riparian Buffers Condition Scores otes: Under U Right Bank Loft Bank . AQUATIC	Native woody species reg than 60% of the coverage are present 5 IS-59 bridge for a port % Ripartian Area> Score > USE: The Transec Optimal	ss both banks*	100-feet riparian Subo Native woody commulty species represent yreater than 00% coverage wody coverage wody coverage with wethan alwe woody coverage with wethanse or grazing activities. High = 4.5 earn, therefore v 20% 3 20% 3 ead based on th Subop Aquatic Life Score arrams that have	Anive woody community species represent between 3060% coverage with AO wellands present. A wood of the maintenance or grazing activities. Low = 4 egefation is more communication of the second of the second of High. Perennial of High. Perennial of High. Perennial of be a second of the second of High.	Mar Native woody co less than 30% maintained or maintained (no isse category s Mar Aquelic Life Sco	mmunty represents coverage with no grazing activities. 3 3 tree cover).	The buffer is domin of the following: maintained rig: cropiand, activel sparsely vegotate area, recently sector other compari- other compari- to the stream is post- to the stream is Po- Aquatic Life Sc Informitien Strea-	aled by one or more levins, movied or thof way, no-till y spraced pasture, of nor-maintained and sublicad or oble condition.	The area is domin surfaces, mina sy crops, active feed cond cond cond cond cond cond cond con	atial by Impervious oil lands, denuded hional Ullage row fols or comparable tions. 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	

Project #	Applicant	n phái nhài c	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description	
					12040103	3/21/2018	1	Existing	
CHANNE	ALTERATION: Stream crossin	ngs, riprap, concre	ie, gabions, or co	ncrete blocks, strak	phtening of chann	el, channelization	embankments, s	poil piles, constrictions, livestock	
	Optimal	Subo	ptimal	Marg	inal	Po	or	Severe	
Channel Alteration		Impacted by dred levees, culverts,	Iprap, bulkheads, ures or withdrawal te of past alteration stream pattern and ered. Withdrawals, if bservable affect on	Between 30-60% of Impacted by dredg levees, culverts, n armor, drop structu structures. Evidence may be present, but stability are begin Withdrawals, if pre- observable affect of observable affect of	ing, dams, dikes, prap, bulkheads, ires or withdrawal e of past alteration stream pattern and ining to recover. sent, may have an t on flow, but no	Between 60-90% Impacted by dred, levees, culverts, r armor, drop struct structures. Evidenc is present, and si stability are n Withdrawals, if pre observable affect habitat	ging, dams, dikes, riprap, bulkheads, ures or withdrawal e of past alteration ream pattern and ot recovering, sent, may have an on both flow and	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, cuiverts, hipro, 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.	AV
SCORE	5		1	3	Constant States	1	2	1	4.00
otes: Only	a portion of the stream is a							or the bridge ramp skirt)	
	REACH	CONDITION	NDEX and S	TREAM CON	DITION UNI	TS FOR THIS	S REACH		
							meth as	E CONDITION INDEX (CI) >>	2.55

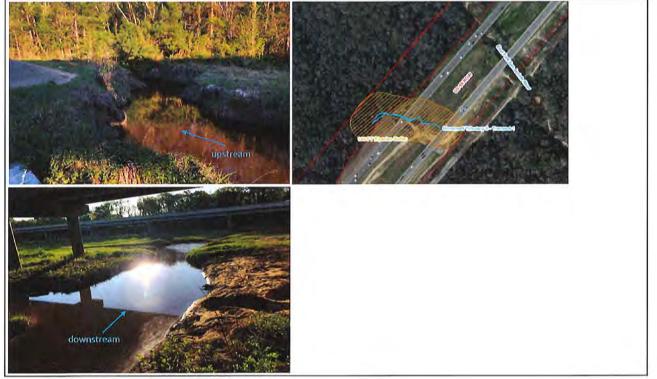






Project#	Applicant	11000	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description	
			-		12040103	3/21/2018	1	Post-project	
. CHANNE	ALTERATION: Stream crossin	igs, riprap, concre	te, gabions, or co	ncrete blocks, straig	phtening of chann	el, channelization,	embankments, s	poil piles, constrictions, livestock	
	Optimal	Subo	ptimal	Marg	inal	Po	or	Severe	
Channel Alteration	Channelization, dredging, alteration or hardrening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levese, culverts, førap, bulkheads, armor, drop structures or withdraval structures within the Transect.	impacted by dred levees, culverts, armor, drop struct structures. Evidems may be present, bu stability have recovy present, have no o	tures or withdrawal ce of past alteration t stream pattern and	Between 30-60% of impacted by dredg levees, culverts, ri armor, drop structu structures. Evidence may be present, but stability are begin Withdrawals, if pre- observable affect observable affect of	ing, dams, dikes, prap, bulkheads, ires or withdrawal e of past alteration stream pattern and uning to recover. sent, may have an t on flow, but no	Between 60-90% impacted by dred; levees, culverts, r armor, drop struct structures. Evidence is present, and st stability are n Withdrawals, if pre observable affect habitat	ging, dams, dikes, iprap, bulkheads, ures or withdrawal le of past alteration ream pattern and ot recovering, sent, may have an on both flow and	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, cuvets, tiprap, buikheads, 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.	AV
SCORE	5		4	3	19 - 19 ATC ATT	1	2	1	4.00
lotes: Only	a portion of the stream is a							or the bridge ramp skirt)	
	REACH C	CONDITION	NDEX and S	TREAM CON	DITION UNI	TS FOR THIS	S REACH		
-	A CONTRACTOR OF A CONTRACTOR A	and the ball of the local data	Party and the second	A CONTRACTOR OF A	and the second			E CONDITION INDEX (CI) >>	2.50





	File Number		Appli	lcant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect D	escription	
		1.111	TXD	от	Ciuci	12040103	3/21/2018	1	Exis	ting	
_	Name(s) of Evalua	tor(s)				Steam Nan	ne and Type			
10.000	J. Pr	escott, A. Greute	ar			Unna	amed Tributa	ry 6A - Intermi	ittent	A	
. Channel C	ondition: Assess	the cross-section	on of the stream a	nd prevailing cond	lition (erosion, ag	gradation).					
1. 1.	Optim	al	Subor	otimal	Mai	rginal	Pe	oor	Sev	ere	
	11	I II	Z	>	2	5	ì	5	Z	5	
Visual Channel Condition Parameter	Channel shows very widening and little or arealon or unprotected of stability include gr vegetative cover on It point bars and bankfull present, mid-channel bars are rare or fransis has access to active IT developed bankfull bulkheading or ritprap	no evidence of banks, Indicators sater than 80% te banks, stable benches may be and transverse ent. The stream occipialn or fully benches. No	Channel is slightly li a few areas of Indicaters of Im vogetalive cover international procession benches are likely pro- sodiment is presen the stream boltem access to bank developed floodphal the reach. Cha evidence of past ch ahoud be exhibiting a nutural channel. It are limited to 1-25	active eroston, intability include or natural rock ont along 60-80% of t bars and bankfull resent and transfert it along 10-40% of . The stream has full benches or ris along portions of nisel may show annel alteration, but notable recovery of buikhead and riprap	Widened, India include the present on 40-60% of the cover or natural ro- 00% of the Tra- undercut bam- associated with present and port may be widening by the channel as translent sedime 60% of the nati bottom. The size access to the Buikheading or rip	or has had its course actors of instability occ of arcsionit) scars. Transact, vegetative ock only found on 40- ansect, vertical or ka, or nickpaints in headcuts may be lions of the channel while other periods of re narrowing, and mits are found in 40- aral stream bed or sam bod or hot hele sam does not hele sam does not hele active floodpilait.	vertically or latera Vibual indicators o incision include net shallow root dapt present along 50-8 vegetalive cover limited to 20-40 substantial sedin uniformed size r along 60-80% of th bars and bankfull i the stream does n active floodplain, riprap are present Trat	dened ar incised with ally unstable banks, drover-widening and ar vertical banks with hy, erosional sears 90% of the Transect, et an taural nock is % of the Transect, material is present material is present to Hava access to an , Buikheading and along 50-80% of the neact.	Channel is deeply in with vertical or later afream bank. Indici include the streambe below the rooting de- vertical or undercut, protection or natural along 20% or less or bank is slouphing an raw banks present Transect and 60 natural streambe substantial sedim threaded channels. not have access to a	ral instability in the adors of instability ad elevation located pth, both banks are vegetative surface I nock is only found I the Transect, the d erostonal scars or on 80-100% of the d is sovered by earl resulting in The stream does an active floodplain.	cv
			4			3		2	1		3.0
	5 Is slightly inclosed an I BUFFERS: Adde	ess both banks'	100-fool riparian	areas slong the er		roinal	Di	por	Sav	ere	
otes: channei	Is slightly inclead an I BUFFERS: Asso Optim Native woody species r	ess both banks* al	100-fool riparian i Suboy Ommuliy apoices represent greater than 60% coverage with //O watlands present within the buffor OR native	areas along the er otimal Native woody community species represent between 30.60% coverage	Mai Native woody co	rginal entimutity represents	The buffer is domin of the following: maintained rig	DOOF	Sev. The area is domina surface. The spo	ited by imperivious bil lands, denuded	
oles: channel . RIPARIAN Riparian	Is slightly inclued an BUFFERS: Asso Optim	ess both banks' al epresent greater go and wetands	100-foot riparian Subor Native woody community species represent greater with <i>NO</i> watrands with <i>NO</i> watrands	areas along the er stimal Native woody community species	Mai Nalive woody co Jess than 30%		The buffer is domin of the following: maintained rig cropiand, active sparsely vegetal urea, necently sea	nated by one or more lawns, mowed or	The area is domina	iled by impervious xil lands, denuded tional tiliaga row ots or comparable	
RIPARIAN RIPARIAN Buffers Condition	Is slightly inclued an BUFFERS: Asso Optim Native woody species r than 60% of the cover	ess both banks' al epresent greater go and wetands	100-foot riparian n Subor Native woody community species represent greater than 60% coverage buffer OR native woody community species represent 30-60% coverage with watianda present No maintenance or	Areas along the er otimal Native woody community spocies represent between 30 60% coverage with NO wetlands present. No meintenance or	Mai Nalive woody co Jess than 30%	mmunity represents	The builter is domin of the following, maintained rig cropiand, active spansely vegetal area, recently seac other compar	tated by one or more lawns, mowed or ht-of-way, no-till ly graxizel pasture, ed non-maintained ded and stabilized or	The area is domina surfaces, mine spo surfaces, conven crops, active feed b	ited by impervious xil lands, denuded licnal tillega row ots or comparable lions.	
Condition Scores	Is slightly inclued an BUFFERS: Asso Optim Native woody species / Unan 60% of the cover are press are press 5 are maintained ROV	ess both banks' al epresent greater ge and wetlands ni. W while others	100-fool riparian a Subor Native voody community spacies represent greater than 60% coverage with XO waitands present within the buffer OR native woody community spacies represent buffer OR native woody community spacies represent bolow coverage with waitands present No maintenance or gracing activities. High = 4,5 are dominated b	Native woody community species represent between 30.60% coverage with NO wellands present. NO wellands grazing activilles.	Mar Native woody co Jeas than 30% maintenance or	erromunity represente coverage with no r grazing activities.	The buffer is domin of the following, maintained rig cropiand, active spansely vegetai area, recently see other compar	tated by one or more levns, mowed or interfwy, notill by greazd pasture, ed non-maintained dread and stabilized rable condition.	The area is domina surfaces, mine spo surfaces, convert crops, active teed t condi	ited by impervious xil lands, denuded licnal tillega row ots or comparable lions.	
RIPARIAN RIPARIAN Buffers Condition Scores	Is slightly inclued an BUFFERS: Asso Optim Native woody species Unan 60% of the covers are prese are prese	esa both banka' al epresent greater ge and wetlanda ni.	100-fool riparian of Subor Subor Native woody community species represent greater than 50% coverage buffor OR native woody coverage buffor OR native woody coverage species represent 30-60% coverage greating activities. High = 4,5	Native woody community species represent between 30.60% coverage with NO wellands present. NO wellands grazing activities.	Mar Native woody co Jeas than 30% maintenance or	erromunity represente coverage with no r grazing activities.	The buffer is domin of the following, maintained rig cropiand, active sparsely vegetai area, recently see other compar	valed by one or more lawns, mowed or hie-f-way, no-till by graved pasture, ed non-maintained dari and stabilized or rable condition.	The area is domina surfaces, causes, mine spo surfaces, caused crops, active feed h condit ands.	iled by impervious il lands, denuded lional tillage row tots or comparable lions.	
Condition Scores	Is slightly inclued an BUFFERS: Asso Optim Native woody species Usen 80% of the cover are press are press 5 are maintained ROV	ess both banks' al epresent greater ge and wetlands nt. W while others 26% 5	100-fool riparian Suboy commuly species represent greater than 60% coverage buffor OR native woody community species represent 30-60% coverage with wallands present No maintenance or grazing activities. High = 4.5 are dominated b 74% 2	Native woody community species represent between 30.60% coverage with NO wellands present. NO wellands grazing activities.	Mar Native woody co Jeas than 30% maintenance or	erromunity represente coverage with no r grazing activities.	The buffer is domin of the following, maintained rig cropiand, active sparsely vegetai area, recently see other compar	sated by one or more lawns, mowed or hteofway, notilit by grazdp pasture, ed non-maintained deal and stabilized or rable condition.	The area is domina surfaces, causes, mine spo surfaces, caused crops, active feed h condit ands.	ited by impervious til lands, denuded lional tillage row tots or comparable lions.	
Condition	Is slightly inclued an BUFFERS: Asso Optim Native woody species / Usen 60% of the cover are prese are prese 5 are maintained ROV	ess both banks' al epresent greater greater greater and wetlands nt. W while others 26%	100-foot riparian n Subor Native woody community species represent grader than 50% coverage whith MO waitlands present within the buffor QR native woody community species represent 30-60% coverage with waitlands present. No mainterance or grazing activities. High = 4,5 are dominated b	Native woody community species represent between 30.60% coverage with NO wellands present. NO wellands grazing activities.	Mar Native woody co Jeas than 30% maintenance or	erromunity represente coverage with no r grazing activities.	The buffer is domin of the following, maintained rig cropiand, active sparsely vegetai area, recently see other compar	tated by one or more levns, mowed or interfwy, notill by greazd pasture, ed non-maintained dread and stabilized rable condition.	The area is domina surfaces, causes, mine spo surfaces, caused crops, active feed h condit ands.	iled by impervious il lands, denuded lional tillage row tots or comparable lions.	BV 3.76
RIPARIAN RIPARIAN Buffers Condition Scores tes: Portions Right Bank Left Bank	Is slightly inclued an BUFFERS: Asso Optim Native woody species a than 60% of the covers are prese 5 are maintained ROV % Ripartan Area> Score >	epresent greater epresent greater mi. W while others 26% 5 91% 5	100-foot riparian i Subor Native woody community species represent greater than 50% coverage buffer OR native woody community species represent 30-60% coverage with wallands present No maintenance or grading activities. High = 4.5 are dominated b 744% 2 9% 2	Areas along the or otimal Native woody community spoces represent between 30.60% coverage with NO wellands present. No wellands present	Ma Nalive woody co less than 30% maintenance or	emmunity represents coverage with no grazing activities. 3 Seater than 60% cov	The bulfer is domin of the following, maintained rig cropiand, active sparsely vegetal area, recently be other compar other compar	valed by one or more lawns, mowed or hiel/way, notili by grazdp pasture, ed non-maintained and salaitized or rable condition.	The area is domina surfaces, causes, mine spo surfaces, caused crops, active feed to condition ands.	ted by impervious si lands, denuded licens lilege row tots or comparable licens. 	
RIPARIAN RIPARIAN Buffers Condition Scores otes: Portions Right Bank Left Bank	Is slightly inclued an BUFFERS: Asso Optim Native woody species r than 60% of the cover are prese 5 are maintained ROV % Riparlan Area> Score > USE: The Transe	ess both banks' al epresent greater greater greater and wetlands nt. V while others 26% 5 5 91% 5 5 91% 5 5	100-foot riparian i Subor Native woody community species represent greater than 60% coverage buffer OR native woody community buffer OR native woody community species represent 30-60% coverage with watianda prosent. No maintenance or gracing activities. High = 4.5 are dominated b 744% 2 9% 2 ed based on If	Areas along the er otimal Native woody community species represent between 30.60% coverage with NO wellands present. According arising activities.	Ma Native woody co less than 30% maintenance or species with gro	emmunity represents coverage with no grazing activities. 3 actor than 60% cov	The buffer is domin of the following, maintained rig cropiand, active sparsely vegetse area, recently active other compar other compar	valed by one or more lawns, mowed or interfway, notilit by grazop pasture, ed non-maintained ade and stabilized rebuilt of the state of the rebuilt of the state of the able condition.	The area is domina surfaces, cause appendix crops, active feed to condition ands.	Hed by impervious billands, denuded licenal tillage row ots or comparable licens.	
RIPARIAN RIPARIAN Buffers Condition Scores otes: Portions Right Bank Left Bank	Is slightly inclued an BUFFERS: Asso Optim Native woody species a than 60% of the covers are prese 5 are maintained ROV % Ripartan Area> Score >	epresent greater epresent greater greater greater epresent greater greater and wetlands nt. V while others 26% 5 91% 5 ect is assess al.	100-foot riparian i Subor Native woody community species represent greater than 50% coverage buffer OR native woody community species represent 30-60% coverage with wallands present No maintenance or grading activities. High = 4.5 are dominated b 744% 2 9% 2	Areas along the or obtimal Native woody community species represent between 30.60% coverage with NO wellands present. No well	Ma Native woody co less than 30% maintenance or upocies with gro upocies with gro use category Man	emmunity represents coverage with no grazing activities. 3 Seater than 60% cov	The buffer is domined in the following, maintained right of the following, maintained right of the second s	valed by one or more lawns, mowed or hiel/way, notili by grazdp pasture, ed non-maintained and salaitized or rable condition.	The area is domina surfaces, causes, mine spo surfaces, caused crops, active feed to condition ands.	eree of Minimal. here a lass of the score a l	

2010	Applicant			ssessm			all the set of the		
Project #			Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description	
_					12040103	3/21/2018	1	Existing	
. CHANNEI	ALTERATION: Stream crossin	igs, riprap, concre	te, gabions, or co	ncrete blocks, straig	thening of chanr	el, channelization,	embankments, s	poil piles, constrictions, livestock	
	Optimal	Subo	ptimal	Marg	inal	Po	or	Severe	
Channel Alteration	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, lovees, culverks, fiprap, buikheads, armor, drop structures or withdrawal structures within the Transect.	Impacted by dred levees, culverts, armor, drop struc structures. Eviden may be present, bu stability have recov present, have no c	of the Transect is ging, dams, dikes, riprap, buikheads, ures or withdrawal e of past alteration t stream pattern and ered. Withdrawals, it bservable affect on ww.	Between 30-60% of impacted by dredg levees, culverts, ri armor, drop structu structures. Evidence may be present, but stability are begin Withdrawals, if pres observable affect o	ing, dams, dikes, prap, bulkheads, res or withdrawal a of past alteration stream pattern and ning to recover. ent, may have an t on flow, but no	Between 60-90% Impacted by dred; levees, culverts, r armor, drop struct structures. Evidenc is present, and st stability are n Withdrawals, if pre observable affect habitat of	ping, dams, dikes, iprap, bulkheads, ares or withdrawal e of past alteration ream pattern and ot recovering. sent, may have an on both flow and	Between 90-100% of the Transect Is impacted by dredging, dams, dikes, levees, cuvers, fiyrap, butkheads, 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 blota.	AV
SCORE	5		4	3		2	2	1	2.00
Notes: impa	cted by drainage structures								
1	REACH	CONDITION	NDEX and S	TREAM CON	DITION UNI	TS FOR THIS	REACH		
								E CONDITION INDEX (CI) >>	2.69



JAN 0 7 2019

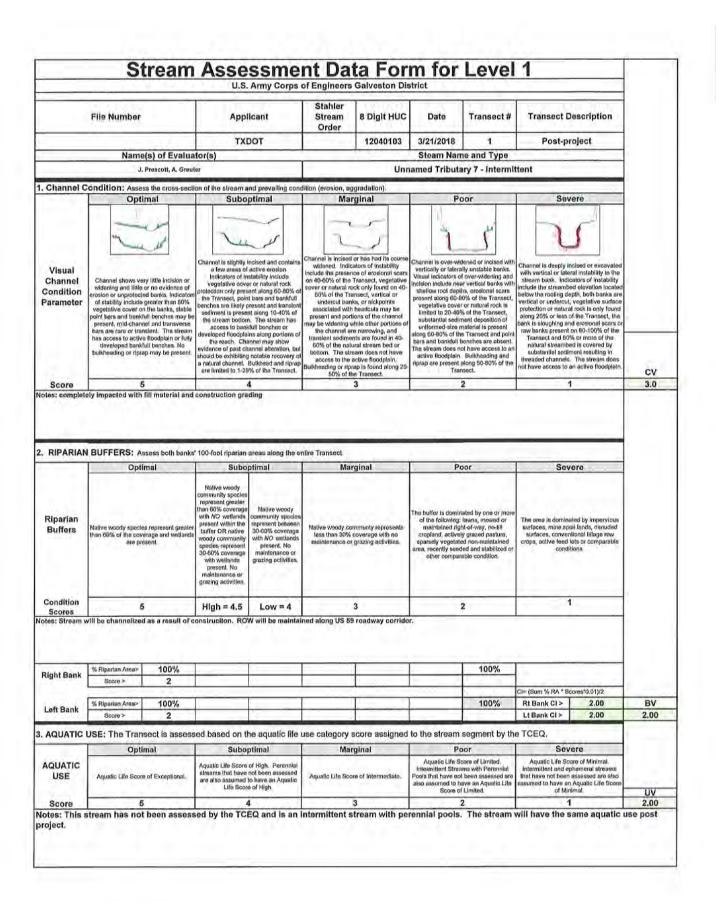
	File Number	L	Appl	licant	Stahler Stream Order	8 Digit HUC	Date	Transect#	Transect D	escription	
_		12.3211	тхі	тот	Older	12040103	3/21/2018	1	Post-pr	oject	
-	Name	(s) of Evalua	tor(s)			I convictoria	Steam Nan	e and Type		-	
-	J.	Prescott, A. Greut	ar			Unna	amed Tributa	ry 6A - Interm	ittent		
Channel (Condition: Asses	and the second se	and the second se	nd prevailing conc ptimal	the state of the s	ggradation). rginal		or	Seve	050	
	Opti		5400	pania	Ma	iginai			3694	ere	
	17	and the	Nu	1	Channel In Inclused	or has had its course	ĩ	5	2	5	
Visuai Channei Condition Parameter	Channel shows var widening and little o arealon or unprotecte af stability include y vegetative cover on point bars and bankt bars and case to active developed bankt buikheading or ripra	or no evidence of d banks. Indicators greater than 80%. The banks, stable all bonches may be al and transverse sient. The stream Roodplain or fully all bonches. No	a few areas of in indicators of in vegetativa cove protection only pres- the Transoct, prin benchas are likely p sediment is prese the stream boltern access to ban- developed floodplat Une reach. Cha- evidence of past ch- stouid be exhibiting	Inclised and contains active eroidon. stability include or or natural rock ent along 60-80% of it bars and bankful resent and transient in along portions of smel may show annie alterstion, but notable recovery of Bukhead and riprap Sof the Transect.	widened, India Include the present on 40-60% of the cover or natural re- 60% of the Tri- undercut baar associated with present and part may be widening to the channel as iransient sedime 60% of the nat boltom. The size access to the subkheading or rip	salors of inatability ransect, vegotativa cock only found on 40- nasect, vertical or kis, or nickpoints headcuts may be tions of the channel while other portions of re narrowing, and mis are found in 40- ural stream bed or earm does not have active floodplaint. Found a long 25- at Transect.	verifically or latera Visual indicators of incision include near shallow rood depti present along 60-8 vegistative cover limited to 20-40° substantial sedin uniformed-size a long 60-80% of the bars and bankfull b The interim does no active floodplain.	or natural rock is s of the Transect, tent deposition of asterial is present to Transect and point enches are absent. It have access to an Buikhadring and tiong 50-80% of the	Channel is deeply in with ventical or later stream bank. India include the streambe below ihe rooting deg vertical or undercut, protection or natural along 20% or less of bank is stoughing and taw banks present o Transect and 80% natural streambe ubbantial sedim libreaded channels. not have access to an	al instability in the ators of instability id elevation located pth, both banks are vegotative surface i rock is only found i the Transect, the d ensional scars or on 80-100% of the - 6 or more of the d is covered by nent resulting in The stream does	CV
Score	5 ely impacted with f			4	0010 50 0	3		2	1		3.0
RIPARIA	N BUFFERS: As	CA STOCKED AND	and the state of the	areas along the er ptimal		rginal	Po	or	Seve	ere	
RIPARIAN Riparian Buffers	C11904.0 109021016	nal s represent greater rage and wetlands	Subor Native woody community species represent greater than 60% coverage with NO wotlands present within the buffer OR native woody community species represent 30-60% coverage with watlands present. No	DALER OF MILL AND	Mai Native woody co	rginal mmunty represents coverage with no grazing activities.	Pc The buffer is domin ef the following: maintained right croptind, ectivet spansely vegetate area, recently seed other compar-	aled by one or more lawna, instwad or t-of-way, no-till grazed pasture, d non-maintained d and stabilized or	Seve The area is dominal surfaces, mine spo surfaces, convent crops, active feed to conditi	led by Impervices I lands, denuided Ional Illage row 15 or comparable	
Riparian Buffers	Optir Native woody special than 60% of the cove are pre-	nal s represent greater rage and wetlands	Subo 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	Nativa woody community species represent between 30-80% coverage with NO wetlands present. No maintenance or	Mai Native woody co	mmunty represents	The buffer is domin al line following: maintained right cropland, ectivel spansely vegetale area, recently seed other compar-	ated by one or more lawna, metwed or t-of-way, no-till grazed pasture, d non-mainteined ad and stabilized or bite condition.	The area is dominal surfaces, mine spo surfaces, convent crops, active feed lo conditi	led by Impervicus il lands, denuded icnal Illage row is or comperable ions.	
Riparian Buffers Condition Scores	Optin Native woody species	nal s represent greater represent greater sent.	Subo Native woody community species represent grouter than 00% overange with NG wetlands present within with species represent 30-00% coverage with wetlands present. No grazing activities High = 4.5	Native woody community species represent between 30-00% coverage with AO wetlands present. No maintenance or grazing activities.	Mai Native woody co leas thora 30% miainternance or	immunty represents coverage with no grazing activilies.	The buffer is domin al line following: maintained rig cropland, activel spansely vegetate area, recently seed other compan	ated by one or more lawna, metwed or t-of-way, no-till grazed pasture, d non-mainteined ad and stabilized or bite condition.	The area is dominal surfaces, mine spoi surfaces, convent crops, active feed to	led by Impervicus il lands, denuded icnal Illage row is or comperable ions.	
Riparian Buffers Condition Scores otes: Stream	Native voody species than 60% of the cove are pret	nal s represent greater represent greater sent.	Subo Native woody community species represent grouter than 00% overange with NG wetlands present within with species represent 30-00% coverage with wetlands present. No grazing activities High = 4.5	Native woody community species represent between 30-00% coverage with AO wetlands present. No maintenance or grazing activities.	Mai Native woody co leas thora 30% miainternance or	immunty represents coverage with no grazing activilies.	The buffer is domin al line following: maintained rig cropland, activel spansely vegetate area, recently seed other compan	ated by one or more lawna, metwed or t-of-way, no-till grazed pasture, d non-mainteined ad and stabilized or bite condition.	The area is dominal surfaces, mine spo surfaces, convent crops, active feed lo conditi	led by Impervicus il lands, denuded icnal Illage row is or comperable ions.	
Riparian Buffers Condition Scores	Optin Native voody specias than 60% of the cove are pres 5 will be channelized	nal s represent greater rage and wellands sent. as a result of c	Subo Native woody community species represent grouter than 00% overange with NG wetlands present within with species represent 30-00% coverage with wetlands present. No grazing activities High = 4.5	Native woody community species represent between 30-00% coverage with AO wetlands present. No maintenance or grazing activities.	Mai Native woody co leas thora 30% miainternance or	immunty represents coverage with no grazing activilies.	The buffer is domin al line following: maintained rig cropland, activel spansely vegetate area, recently seed other compan	aled by one or more lawria, interwed or t-of-way, no-till grazed pasture, d non-mainteined d and stabilized bite condition.	The area is dominal surfaces, mine upo surfaces, convent crops, active feed to conditi	led by Impervious II landa, denuided fonal tillage row of comperable fona.	
Riparian Buffers Condition Scores otes: Stream	Optir Native voody species than 60% of the cove are pres are pres 5 will be channelized % Riparian Area> §core >	nal s represent greater range and wellends sent. as a result of c <u>100%</u> 2	Subo Native woody community species represent grouter than 00% overange with NG wetlands present within with species represent 30-00% coverage with wetlands present. No grazing activities High = 4.5	Native woody community species represent between 30-00% coverage with AO wetlands present. No maintenance or grazing activities.	Mai Native woody co leas thora 30% miainternance or	immunty represents coverage with no grazing activilies.	The buffer is domin al line following: maintained rig cropland, activel spansely vegetate area, recently seed other compan	aled by one or more invent, interved or t-of-way, os-till grazed pasture, d non-meinterined et and stabilized or this condition.	The area is dominal surfaces, mine spo eurgaces, convent crops, active feed to conditi condition of the second condition condittion condition cond	led by Impervious II landa, denuided fonal tillage row of comparable fona.	
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Riparian Buffers Condition <u>Scores</u> tes: Stream Right Bank	Valive voody species than 60% of the cove are pre- are pre- screp > % Riparian Area> \$core > \$core >	nal s represent greater rage and wellands sont. as a result of c 100% 2 100% 2	Subo Native woody community secless represent greater with NO waitands present within the buffer OR native woody community species represent 30-03% coverage with waitands present. No maintenance or grazing activities High = 4.5	Native woody community species represent between 30-50% coverage with NO wetlands present. No maintenance of grazing activities Low = 4 W will be mainteal	Mar Native voody co tos frian 30% maintenance or ned along US 59	mmunty represents coverage with no grazing activities. 3 7 roadway corrido	The buffer is domin al ins following: maintained rig cropiand, activel sparsely vegetate area, recently area other compan	aled by one or more lawna, mewed or t-of-way, co-till grazed pasture, d non-mainteined et and stabilized or the condition.	The area is dominal surfaces, mine spo condition crops, active feed to condition definition condittion condition condition condition condition con	led by Impervious II landa, denuded ional (Illage row oto or comparable ions.	_
Riparian Buffers Condition <u>Scores</u> tes: Stream Right Bank	Optin Native voody species than 60% of the cove are pro- sere pro-	nal s represent greater rage and wellands sent. as a result of c 100% 2 100% 2 sect is assess	Subo Native woody community secies represent greater than 60% coverage with NO waitands present within the buffer OR native woody commonly species represent with waitands present. No maintenance or grazing activities High = 4.5 Donstruction. ROV	Native woody community species represent between 30-60% coverage with NO wetwards present. No maintenance or grazing activities Low = 4 W will be maintein	Mai Native woody co toss then 30% maintenance or ned along US 51	ammunty represents coverage with no grazing activities. 3 9 readway corridor	The buffer is domin al ins following: maintained rig sparsely vegatate area, meanly segatate other compan	aled by one or more lawria, inswed or t-of-way, no-bill grazed pasture, d non-maintained ed not stabilized or bits condition.	The area is dominal surfaces, mine spoi crops, active feed lo conditi rops, active feed lo conditi crops, active feed lo condition condi condition condition condi condition condition condition con	led by Impervious II lands, denuded lonal tillage row to or comparable lons.	_
Riparian Buffers Condition Scores otes: Stream Right Bank Loft Bank AQUATIC	Valive voody species than 60% of the cove are pre- are pre- screp > % Riparian Area> \$core > \$core >	nal s represent greater rage and wetlands sont. as a result of c 100% 2 100% 2 sect is assess nal	Subo Native woody community secless represent greater with NO waitands present within the buffer OR native woody community species represent 30-03% coverage with waitands present. No maintenance or grazing activities High = 4.5	Native woody community species represent between 30-50% coverage with X/O wellends present. No maintenance or grazing activities Low = 4 W will be mainteal W will be mainteal of High. Perennial not been assessed	Mar Native woody co toss than 30% maintenance or ned along US 59 ned along US 59 maintenance or maintenance or	mmunty represents coverage with no grazing activities. 3 7 roadway corrido	The buffer is domin al ins following: maintained right sparsely vegatate area, meanity segatate other compan	aled by one or more lawna, mewed or t-of-way, no-bli grazed pasture, d non-mainteined ed and stabilized bits condition.	The area is dominal surfaces, mine spoi aurfaces, convent crops, active feed lo conditi crops, active feed lo condition (Cl= (Sum % RA * Soc Rt Bank Cl > Lt Bank Cl > Et Bank Cl > Cl= Seve Aquelle Life Soo Intermitter and ept that have not been a	led by Impervious II lands, denuided ional tillage row tas or comparable ions.	2.00
Riparian Buffers Condition Scores otes: Stream Right Bank Loft Bank . AQUATIC	Optin Native voody species Ihan 60% of the coverse press # Riparian Area> Score > % Riparian Area> Score > Will be channelized Will De channelized Score > Will De channelized Score > Score > USE: The Trans Optin	nal s represent greater rage and wetlands sont. as a result of c 100% 2 100% 2 sect is assess nal	Subo Native woody community secies represent greater with NO wetlands present within the buffer OR native woody correnge with wetlands present with wetlands present second with wetlands present. No maintenance or grazing activities High = 4.5 onstruction. ROV	Native woody community species represent between 30-60% coverage with AO wetlands present. No maintenance or grazing activities Low = 4 AV will be mainten will be mainten be aquatic life to totimal of High. Perennial not bein assessed of High. Perennial not bein assessed	Mai Native voody co tos fran 30% maintenance or ned along US 69 ned along US 69 use calegory 1 Mar Aquetic Life Sco	ammunty represents coverage with no grazing activities. 3 9 roadway corridoo	The buffer is domin al the following: maintained right croptand, activel sparsely vegetate area, recently compari- other compari- compari- compari- tion the stream in Pools that have not	aled by one or more awana, mewed or t-of-way, co-til grazed pasture, d non-mainteined ed and stabilized or table condition.	The area is dominal surfaces, mine spo eurfaces, convent crops, active feed is condition (condition) (led by Impervicus II lands, denuided iconst Uilage row ts or comparable ions. ores*0.01)/2 2.00 2.00 2.00 3re or of Minimal, hemeral streams assessed are also Aquatic Life Score ms).	_

CHANNEL A	ALTERATION: Stream crossing			Locality Cowardin Class.	N 77	Date		Transact Description	
CHANNEL A	ALTERATION: Stream crossing			in come	12040103	3/21/2018	1.	Post-project	
	TATA AND A DATA AND A COMPANY AND A	gs, riprap, concrete, g	abions, or cor	icrete blocks, straig	htening of chann	el, channelization,	embankments, s	poil piles, constrictions, livestock	
	Optimal	Suboptin	nal	Marg	inal	Po	or	Severe	
Channel un		Less than 30% of the Impacted by dredging, levees, cuiverts, ripray armor, drop structures structures. Evidence of may be present, but stre stability have recovered, present, have no observ flow.	dams, dikes, o, buikheads, or wilhdrawal past alteration am pattern and Wilhdrawals, if	Between 30-00% of impacted by diredgi levees, culvets, rij armor, drop structu structures. Evidence may be present, but stability are begin Withdrawats, if pres observable affect of	ing, dams, dikes, prep, buikheads, res or wilhdrawal s of past alteration stream pattern and ning to recover, ent, may have an on flow, but no	Between 60-90% of Impacted by dredg Ievees, cuiverts, n armor, drop structus structures. Evidence is present, and sin stability are no Withdrawais, if pres observable affect habitat of	ing, dams, dikes, prsp, bulkheads, res or withdrawal e of past alteration earn pattern and t recovering, end, may have an on both flow and	Between 90-100% of the Transuct is impacted by dredging, dams, dikes, levoes, culverds, fiprap, bulkheads, armor, drop star, tiprap, bulkheads, siluctures, Withdrawals, if present, are large enough to have severe loss of flow and cause little to no hebitat or biola.	AV
SCORE	5	4		3	6	2		1	1.00
otes: complet	etely impacted with fill ma	terial and constr	uction gra	ding					

	Trian at Description	*			Stahler	2B. 11		PH- M-	
ption	Transect Description	Transect #	Date	8 Digit HUC	Stream Order	icant	Аррі	File Number	
	Existing	1	3/21/2018	12040103	201	тот			
	tent		Steam Nam amed Tributa	Unn				J. Prescott, A. Greut	
				Contraction of the	tion (erosion, ap	nd prevalling cond	on of the stream a	Condition: Assess the cross-section	Channel C
	Severe	or	Po	ginal		ptimal		Optimal	
	J	5	i	or has had its course		~	Tu	17	
bility in the instability fion located h banks are only found ansect, the mail scars or 00% of the	Channel is deeply incleed or excaval with vertical or tateral instability in it stream bank. Indicators of instabilit include the streambed elevation local below the rooting depth, both banks a vertical or undercut, vegetative surfar protection or nutural rock is only focus along 20% or lease of the Transect, It bank is sloughing and ercelonal factors row banks present on 80-100% of the Store of the Store of the Store of the Store of the transect.	ly unstable banks, over-widening and r vertical banks with s, erosional scars b% of the Transect, or natural rock is s of the Transect, ient deposition of iaterial is present	Channel is over-wid vertically or lateral Visual indicators of Incision Include near shallow root depth present along 60-80 vegetative cover- limited to 20-40% substantial sedim uniformed-size m along 60-80% of the	stora of instability are of erosional scars Transect, vegetative ck only found on 40- nsect, vertical or a, or nickpoints headcuts may be ons of the channel hille other portions of a narrowing, and	widened. Indica include the present on 40-80% of the 1 cover or natural ro 60% of the Tra- undercut bank associated with present and porti- misy be widening w the channel are	stability include ir or natural rock ent along 60-80% of I bars and bankfull vesent and inansient ht along 10-40% of . The sirieam has full benches or	a few areas of Indicators of in- vegetative cove protection only pras- the Transect, poin benches are likely p sediment is preset	Channel shows very little incision or widening and little or ne evidence of revision or unprotected banks. Indicates at stability include greater than 80% vegetalitive cover on the banks, stabile point bars and bankful benches may be present, intic-bankel and transverse bars are rate or transient. The ateram	Visuai Channel Condition Parameter
rered by uiting in ream does	Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream doe not have access to an active floodpla	enches are absent. I have access to an Buildheading and long 50-80% of the sect.	bars and bankfull b The stream does no active floodplain, riprap are present a Trans	Its are found in 40- ral stream bed or am does not have ictive floodplain. ap is found along 25- e Transect.	60% of the natu bottom. The stre access to the a Butkheading or rips	nnel may show annel alteration, but notable recovery of Bulkhead and riprap % of the Transect.	Ihe reach. Cha evidence of past ch should be exhibiting a natural channel. I are limited to 1-25	has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present.	
					and the second second second	1	a natural channet. Bulkhead and ripra are limited to 1-28% of the Transect. 4		Score
	1 Severe		2 Po	3 ginal	lice Transect.	areas along the en		Is widening and has increased set NBUFFERS: Assess both banks Optimal	otes; channel
denuded age row		IOF ated by one or motie awns, mowed or LaGway, no-till grazed pasture, d non-maintained d and stabilized or			lire Transeci. Mar Nativa woody cor Jess than 30% c	areas along the en	100-foot riparian	BUFFERS: Assess both banks	otes; channel
denuded age row	Severe The area is dominated by imperviou surfaces, mine spoil lands, denude surfaces, conventional itiliza row crops, active feed for sor comparabil	OF average of the second of th	Po The buffer is domina of the following i repland, actively sparsoly vogotee area, recornly seed	ginal nmunity reprosents soverage with no	lire Transeci. Mar Native woody cor less than 30% c maintenince or	neess along the er ptimal Native woody community species represent between 30-60% coverage with VO wefands present. No maintenance or	100-foot riparian Suboy Nalive woody tepresent yrealer than 60% covrage buffer OR native woody community specien represent 30-60% covrage with watlands present. No maintenance or	BUFFERS: Assess both banks Optimal Native woody species represent greater than 60% of the coverage and wetlands	otes; channel) . RIPARIAN RIparian
denuded Isga row Imperable	Severe The area is dominated by impervicu eurfaces, mine apoli lands, denudes surfaces, conventional illuga row erops, active feed tots or comparabl conditions.	OF ated by one or motie awns, mowed or Lefway, no-till grazed pasture, d non-maintained and stabilized or tible condition.	Po The buffer is domina of the following i maintained righ cropiand, actively sparsely vogetate area, recortly seed other compara	ginal muuty reprasonis soverage with no prezing activities.	lire Transeci. Mar Native woody coo Jess ihan 20% maintenance or	Areas along the er ptimal Native woody community species represent between 30-00% coverage with NO vertlands present. No maintenance or grazing activities. Low = 4	100-foot riparian Subop Nativa woody community species represent greater than 60% coverage buffer OR native woody community species represent 30-00% coverage with waitands present. No maintenance or grazing activities. High = 4.5	Native woody species represent greater than 60% of the coverage and wellands are present.	RIPARIAN RIPARIAN Buffers Condition Scores
denuded Ispar row Imperable	Severe The area is dominated by impervicul surfaces, mine apoli lands, denudes surfaces, conventional fillinga row erops, active feed tots or comparable conditions. 1 Cl= (Sam % RA * Spores*0.01)/2	or sted by one or mate awns, moved or Lefway, notilit grazed pasture, d non-maintained and stabilized or blo condition.	Po The buffer is domina of the following i maintained righ cropiand, actively sparsely vogetate area, recortly seed other compara	ginal muuty reprasonis soverage with no prezing activities.	lire Transeci. Mar Native woody coo Jess ihan 20% maintenance or	Areas along the er ptimal Native woody community species represent between 30-00% coverage with NO vertlands present. No maintenance or grazing activities. Low = 4	100-foot riparian Subop Nativa woody community species represent greater than 60% coverage buffer OR native woody community species represent 30-00% coverage with waitands present. No maintenance or grazing activities. High = 4.5	A BUFFERS: Assess both banks Optimal Native woody species represent greater than 60% of the coverage and wellands are present. 5 ative woody community and non-m % Ripartan Area> 100% Score > 3	RIPARIAN RIPARIAN Buffers Condition Scores
denuded isga row imparable	Severe The area is dominated by impervicu eurfaces, mine apoli lands, denudes surfaces, conventional illuga row erops, active feed tots or comparabl conditions.	OF ated by one or motie awns, mowed or Lefway, no-till grazed pasture, d non-maintained and stabilized or tible condition.	Po The buffer is domina of the following i maintained righ cropiand, actively sparsely vogetate area, recortly seed other compara	ginal muuty reprasonis soverage with no prezing activities.	lire Transeci. Mar Native woody coo Jess ihan 20% maintenance or	Areas along the er ptimal Native woody community species represent between 30-00% coverage with NO vertlands present. No maintenance or grazing activities. Low = 4	100-foot riparian Subop Nativa woody community species represent greater than 60% coverage buffer OR native woody community species represent 30-00% coverage with waitands present. No maintenance or grazing activities. High = 4.5	Native woody species represent greater than 60% of the coverage and wetlands are present. 5 ative woody community and non-n	RIPARIAN RIPARIAN Buffors Condition <u>Scores</u> tes: Mix of na
denuded isga row imparable	Severe The area is dominated by impervicul surfaces, mine apoli lands, denuded surfaces, conventional tillaga row erops, active feed tots or comparable conditions 1 Clier (Sum % PA * Scores*0.01)/2 Rt Bank Cl > 3.00 Lt Bank Cl > 3.00	or sted by one or more awns, mowed or Lofway, no-lill grazed pasture, d non-maintained and stabilized or ble condition. 2 100%	Po The buffer is domina of the following i repland, actively sparady vegatede area, recently seed other compara	ginal	lice Transeci. Mar Native woody cor less than 30% maintenance or maintenance or	Areas along the er ptimal Native woody community species represent between 30-00% coverage with XO wetlands present. No maintenance or grazing activities. Low = 4 o maintenance ac	100-foot riparian Suboy community species represent yrealer than 60% covrage buffer OR native woody community species represent 30-60% covrage with watlands present. No maintenance or grazing activities. High = 4.5 ativo species. N	I BUFFERS: Assess both banks Optimal Native woody species represent greater than 60% of the countrage and wellands are present. 5 Ative woody community and non-netwoody community and non-netwoody access % Ripartian Area> 100% % Ripartian Area> 100%	RIPARIAN RIPARIAN Buffers Condition Scores ces: Mix of na light Bank
idenuided Isage row emperable)))///2),000 1,000 1,000	Severe The area is dominated by imperviou surfaces, mine apol lands, denudes surfaces, conventional tillaga row crops, active feed fets or comparabl conditions Cle (Sam % RA * Scores*0.01)/2 Rt Bank Cl > 3.00 Lt Bank Cl > 3.00 a TCEQ. Severe Aquatic Life Score of Minimal.	or ted by one or motie awns, mowed or Lofway, no-lill grazed pasture, d non-maintained and stabilized or ble condition. 2 100% segment by the or or of Limited, ms with Perennial	Po The buffer is domina of the following i repland, actively sparady vegatede area, recently seed other compara other compara 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	ginal mmunly represents soverage with no prazing sclivities. 3 corre assigned ginal	lice Transeci. Mar Iess than 30% or maintenance or Elvitifes.	areas along the er ptimal Native woody community species second coverage with NO writinds preant. No maintenance or grazing activities Low = 4 o maintenance ac he aquatic life u ptimal ot high. Perential	100-foot riparian Subor Native woody community species represent greater system of the	A BUFFERS: Assess both banks Optimal Native woody species represent greater than 60% of the coverage and wetlands are present. 5 ative woody community and non-non the woody community and non-non the second	RIPARIAN RIPARIAN Buffers Condition Scores tes: Mix of na Right Bank Loft Bank AQUATIC
denuded isga row imperable http://www.imperable http://wwwww.imperable http://www.imperable http://www.imperable h	Severe The area is dominated by impervicul surfaces, mine apoli lands, denuted surfaces, conventional likings row crops, active feed tots or comparable conditions 1 Cl= (Sum % RA * Scores*0.01)/2 Rt Bank Cl > 3.00 Lt Cl= (Sum Cl > 3.00	or ted by one or motie wwns, mowed or Lofway, no-lill grazed pasture, d non-maintained and stabilized or ble condition. 2 100% 100% or or or or or Limited, ms with Perominit been assessed are with Perominit been assessed are with Perominit been assessed are on an Aquate Life	Po The buffer is domina of the following i majorana actively approxip vogated area, recornity seed other compara 2 to the stream s Po Aquato Life So	ginal mmunly represents soverage with no prazing sclivities. 3 corre assigned ginal	Netive woody cor less than 30% or maintenance or Divities.	Areas along the er Dimal Native woody community species represent between 30-00% coverage with NO wetlands present. No maintenance or grazing activities. Low = 4 o maintenance ac domaintenance domaintenance ac domaintenance domaintenance	100-foot riparian Subop Nativa woody community species represent greater than 60% coverage with WD weitands present No buffer OR native woody community species represent 30-60% coverage with weitands present. No maintenance or grazing activities. High = 4.5 ative species. N	Second state Second state Weilve woody species represent greater than 60% of the coverage and weilands are present. 5 ative woody community and non-merical score > 3 % Ripartan Area> 100% Score > 3 3 % Ripartan Area> 100% Score > 3 3 WSE: The Transect is assess	RIPARIAN RIPARIAN Buffers Condition Scores stes: Mix of na Right Bank

SCORE 5 4 3 2 1 4 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 REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH	Project #	Applicant	1 II	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description	
Optimal Suboptimal Marginal Poor Severe Channel Channelization, dredging, alteration of hardening absent. Stream has unaltered pattern of has normalized. Ng unaltered pattern or has						12040103	3/21/2018	1	Existing	
Channel Channelization, dredging, alteration or hardening absent. Stream has nullered pattern or has normalized, Na mor, drop structures or withdrawal structures. Evidence of past alteration of more structures or withdrawal structures. Evidence of past alteration observable affect on habitat or bloka. Between 00-00% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration astability are recovered. Between 00-00% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration astability are recovered. Between 00-00% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration astability are recovered. Between 00-00% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration astability are recovered. Between 00-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal astability are recovered. Between 00-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal astability are recovered. Between 00-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal astability are recovering. Between 00-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures within the is present, have recovering, third wavels, if present, may have an observable a	. CHANNEL	ALTERATION: Stream crossin	ngs, riprap, concre	te, gabions, or co	ncrete blocks, straig	htening of chann	el, channelization.	embankments, s	poil piles, constrictions, livestock	
Channelization, dredging, alteration or hardening absent. Stream has 30% of the Transect is proceed, survers, tiprap, bulkheads, and, dredging, dams, dikes, levees, culvers, tiprap, bulkheads, levees, culvers, tipra		Optimal	Subo	ptimal	Marg	inal	Po	or	Severe	
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		hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withbads, armor, drop structures or withbads, armor, drop structures within the	impacted by drec levees, culverts, armor, drop struc structures. Eviden may be present, bu stability have recov present, have no o	Iging, dams, dikes, riprap, bulkheads, tures or withdrawal ce of past alteration it stream patterm and ered. Withdrawals, il observable affect on	Impacted by dredg levees, culverts, ri armor, drop structu structures. Evidence may be present, but stability are begin Withdrawals, if pre- observable affect	ing, dams, dikes, prap, bulkheads, res or withdrawal s of past alteration stream pattern and ning to recover. ent, may have an on flow, but no	impacted by dred levees, culverts, i armor, drop struct structures. Evidenc is present, and st stability are n Withdrawals, if pre observable affect	ging, dams, dikes, iprap, bulkheads, ures or withdrawal e of past alteration ream pattern and ot recovering. sent, may have an on both flow and	impacted by dredging, dams, dikes, levees, cuiverts, riprap, buikhoads, 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	AV
REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH	SCORE	5	1	4	3			2	1	4.00
REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH			some areas; I	4 nowever, the e				2	1	
										_
THE CONDITION INDEX (CI) >> 3		REACH	CONDITION	INDEX and S	TREAM CON	DITION UNI	TS FOR THIS	SREACH		

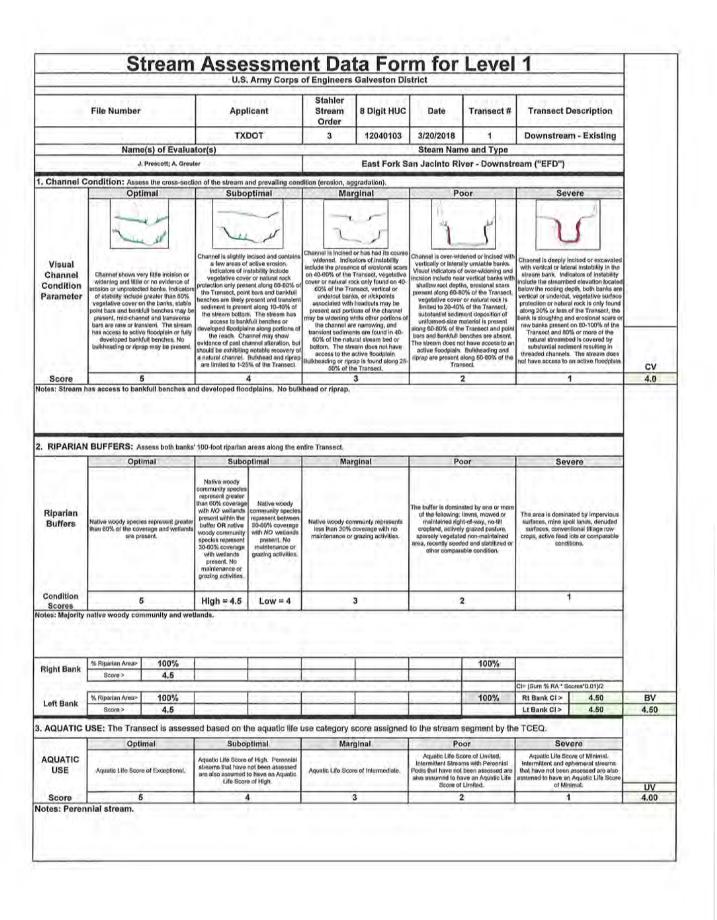




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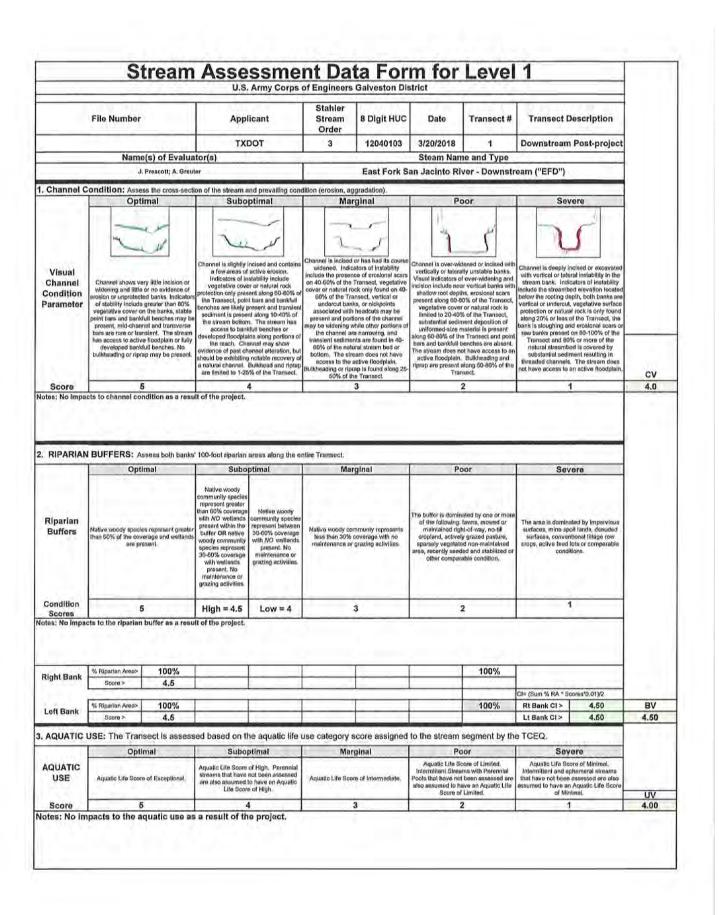
Project#	Applicant	an and a	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description	
					12040103	3/21/2018	1	Post-project	
. CHANNE	LALTERATION: Stream crossin	igs, riprap, concre	le, gabions, or co	ncrele blocks, strai	ghlening of chann	el, channelization,	embankments, s	poil piles, constrictions, livestock	
	Optimal	Subo	ptimal	Marg	linal	Po	or	Severe	
Channel Alteration	Channelizetion, dredging, alteration or hardening absent. Stream has unattered pattern or has normalized. No dams, dikes, levees, culverts, frage, buikhaads, armor, drop structures or withdraves structures within the		of the Transect is lging, dams, dikes, riprap, bulkheads, tures or withdrawal co of past alteration it stream pattern and ored. Withdrawals, i beservable affect on ow.		ping, dams, dikes, iprap, bulkheads, ures or withdrawai e of past alteration stream pattern and inning to recover, sent, may have an t on flow, but no	Between 60-90% Impacted by dredy Invees, culverts, r armor, drop structus structures. Evidence is present, and st stability are n Withdrawals, If pre- observable affect habitat	ping, dams, dikes, iprap, buikheads, ures or Withdrawal e of past alteration ream pattern and ot recovering, sent, may have an on both flow and	Between 90-100% of the Transect Is impacted by dredging, dams, dikes, levees, cuiverta, fiprap, bulkhada, 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.	AV
SCORE	- 5		4	3	1			1	4.00
Notes: Ephe	meral stream is ponded in a	some areas; I	nowever, the	obstructions a	re not man-n	ade.			
	REACH	CONDITION	INDEX and S	TREAM CON	IDITION UNI	TS FOR THIS	REACH		
					Concerning of the second se			E CONDITION INDEX (CI) >>	2.75

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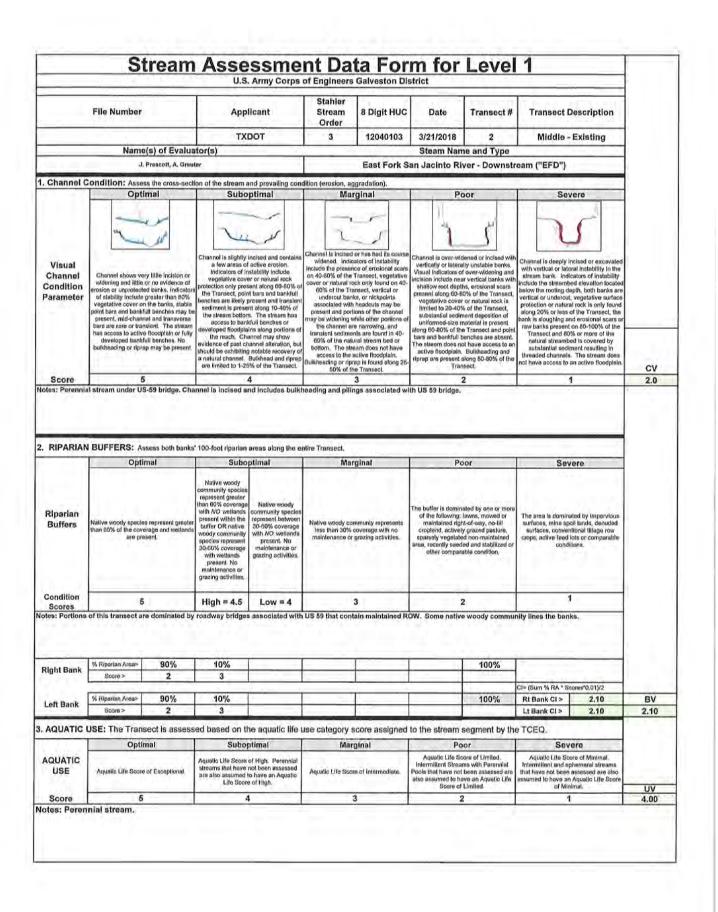
Project#	Applicant	121112-101	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description	
					12040103	3/20/2018	1	Downstream - Existing	
. CHANNE	LALTERATION: Stream crossin	ngs, riprap, concre	te, gablons, or co	ncrete blocks, straig	phtening of chann	el, channelization,	embankments, s	poil piles, constrictions, livestock	
	Optimal	Subo	ptimal	Marg	inal	Po	or	Severe	
Channel Alteration	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverks, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	impacted by dree levees, culverts, armor, drop struc structures. Eviden may be present, be stability have reco- present, have no	of the Transect Is lging, dams, dikes, riprap, bulkheads, tures or withdrawal ce of past alteration at stream pattern and rered. Withdrawals, if observable affect on ow.	Between 30-60% of impacted by dredg levees, culverts, ri armor, drop structu structures, Evidence may be present, but stability are begin Withdrawals, if pres observable affect of	ing, dams, dikes, prap, bulkheads, ires or withdrawal e of past alteration stream pattern and ining to recover. sent, may have an t on flow, but no	Between 60-90% Impacted by dred; levees, culverts, r armor, drop struct structures. Evidence is present, and st stability are n Withdrawats, if pre- observable affect habitat of	ging, dams, dikes, iprap, bulkheads, ures or withdrawal e of past alteration ream pattern and bit recovering. sent, may have an on both flow and	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, fiprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large encugh to have severe loss of flow and cause little to no habitat or biote.	AV
SCORE	5	Corporation and	4	3	Contraction and the		2	1	4.00
lotes: Upstr	ream is impacted directly by	y US-59 bridg	e, this sectior	n is not directly	y impacted b	y man-made a	Iterations.		
	DEAQU	CUDITION		TREAM CON	DITION		DEAGU		



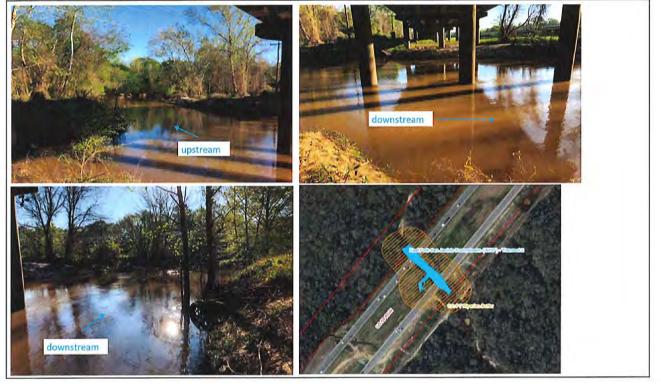


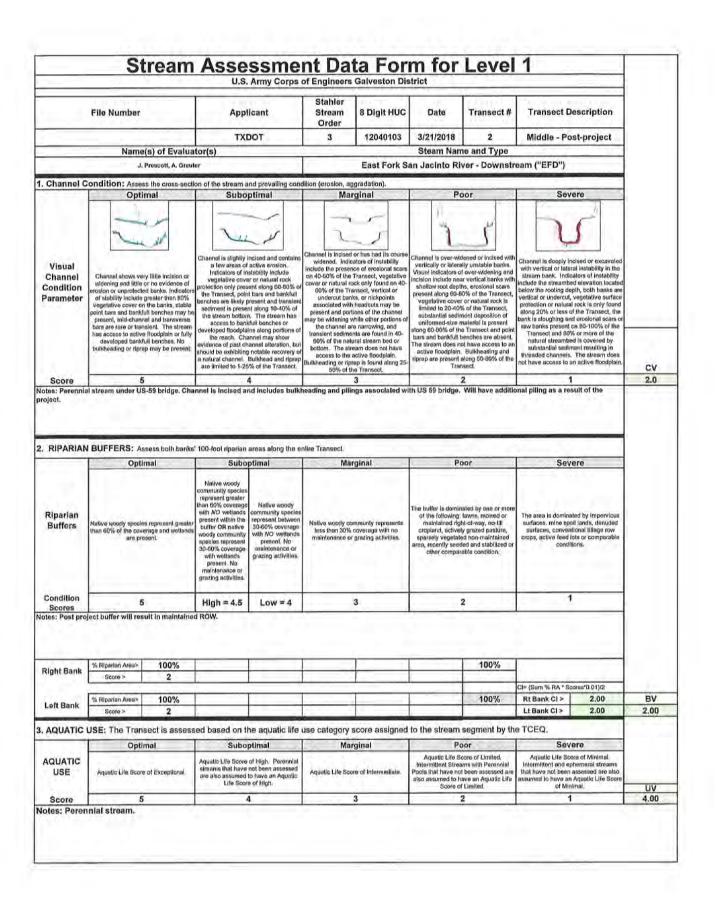
Project #	Applicant		Locality	Cowardin Class.	HUC	Date	Transect#	Transect Description	
					12040103	3/20/2018	1	Downstream Post-project	
CHANNEL	LALTERATION: Stream crossin	gs, riprap, concre	te, gabions, or cor	ncrete blocks, straig	htening of chann	el, channelization,	embankments, s	poil piles, constrictions, livestock	
	Optimal	Subo	ptimal	Marg	inal	Po	or	Severe	
Channel Alteration	Channelization, dredging, alteration or hardening absort. Stream has unaltered pattern or has normalized. No dams, dikes, leviese, culverks, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Impacted by dred levees, culverts, armor, drop struc structures. Eviden may be present, bu stability have recov present, have no c	of the Transect Is lging, dams, dikes, riprap, bulkheads, tures or withdrawal ce of past alteration it stream pattern and ered. Withdrawals, if pbservable affect on ow,	Between 30-60% of Impacted by dredg levees, culverts, n' armor, drop structu structures. Evidence may be present, but stability are begin Withdrawals, if pres observable affect o	ing, dams, dikes, prap, bulkheads, res or withdrawal e of past alteration stream pattern and ning to recover. ent, may have an on flow, but no	Between 60-90% impacted by dredy levees, culverts, a armor, drop struct structures. Evidenc is present, and si stability are n Withdrawals, if pre observable affect habitat	ging, dams, dikes, iprap, bulkheads, ares or withdrawal e of past alteration ream pattern and bt recovering, sent, may have an on both flow and	Between 90-100% of the Transect is impacted by dredging, dama, dikes, levees, culverts, fiprap, buikheads, 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 biots.	AV
SCORE	5		4	3		3	2	1	4.00
lotes: no ch	annel alterations as a resu	It of the proje	ct.						
_				TREAM CON			BELOU		



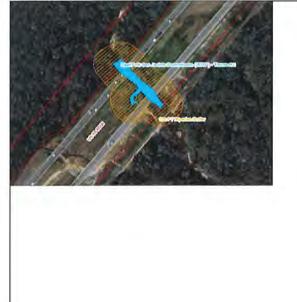


Project#	Applicant		Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description	
					12040103	3/21/2018	2	Middle - Existing	
. CHANNE	ALTERATION: Stream crossin	gs, riprap, concret	e, gabions, or co	ncrete blocks, straig	htening of chann	el, channelization,	embankments, s	poil piles, constrictions, livestock	
	Optimal	Subo	otimal	Marg	inal	Po	or	Severe	
Channel Alteration	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, lovees, culverks, fiprap, buikheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of Impacted by dredy levees, culverts, r armor, drop struct structures. Evidence may be present, bul stability have recove present, have no of flo	ling, dams, dikes, iprap, bulkheads, ures or withdrawal te of past alteration stream pattern and ored. Withdrawals, it bservable affect on	Between 30-60% impacted by dredg levees, culverts, r armor, drop structu structures. Evidenc may be present, but stability are begin Withdrawals, if pre- observable affect of observable affect of	ing, dams, dikes, iprap, bulkheads, irres or withdrawal e of past alteration stream pattern and ining to recover. sent, may have an t on flow, but no	Between 60-90% impacted by dredy levees, culverts, r armor, drop struct structures. Evidenc is present, and st stability are n Withdrawals, if pre observable affect habitat of	ping, dams, dikes, iprap, bulkheads, ures or withdrawal e of past alteration ream pattern and bit recovering, sent, may have an on both flow and	Between 90-100% of the Transact is impacted by dredging, dama, dikes, levees, cuiverts, tiprap, buikheads, armor, drop structures or vithdrawal structures. Withdrawals, if present, are large enough to have several loss of flow and cause little to no habitat or biola.	AV
SCORE	5		1	3		1	2	1	2.00
lotes: Impa	cted by existing pilings of t								
	REACH (CONDITION I	NDEX and S	TREAM CON	DITION UNI	TS FOR THIS	REACH		_
And the second								E CONDITION INDEX (CI) >>	2.5





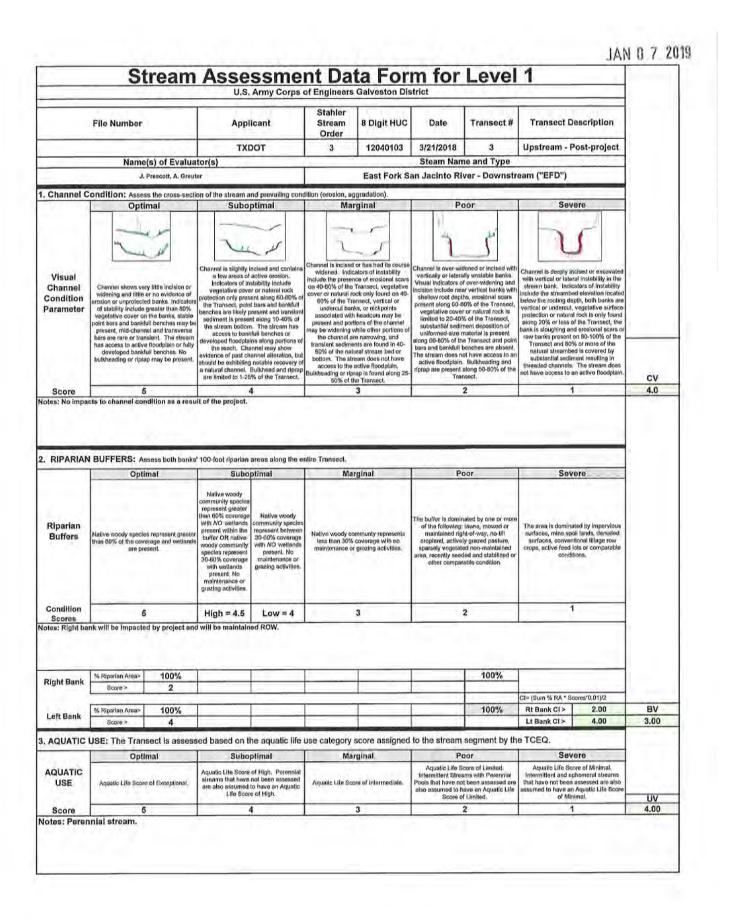
Project #	Applicant		Locality	Cowardin Class.	HUC	Date	Transoct #	Transect Description	
12.54					12040103	3/21/2018	2	Middle - Post-project	
CHANNEL	LALTERATION: Stream crossin	igs, riprap, concre	e, gabions, or cor	crete blocks, straig	htening of chann	el, channelization,	embankments, s	poil piles, constrictions, livestock	
	Optimal	Subo	otimal	Marg	ínal	Po	or	Severe	
Channel Alteration	Channelization, dredging, sileration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverks, fiprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of Impacted by dred levees, culverts, armor, drop struct structures. Evideme may be present, but stability have recove present, have no o Re	ging, dams, dikes, iprap, bulkheads, ures or withdrawal e of past alteration stream pattern and reed. Withdrawals, if bservable affect on	Between 30-60% of impacted by dredg levees, culverts, ri armor, drop structu structures. Evidence may be present, but stability are begin Wihdrawals, if pres observable affect observable affect of	ing, dams, dikes, prap, buikheads, res or withdrawal of past alteration stream pattern and ning to recover. ent, may have an on flow, but no	Between 60-90% Impacted by dredg lavees, cuiverts, r armor, drop struct structures. Evidence is present, and st stability are n Withdrawals, if pre- observable affect habitat of	ing, dams, dikes, iprap, buikheads, ares or withdrawal e of past alteration ream pattern and bit recovering, sent, may have an on both flow and	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, buikheads, armor, drop structures or withdrawal alructures. Withdrawals, if present, are large enought to have severe loss of flow and cause little to no habitat or biots.	AV
SCORE	5		1	3	1	1		1	2.00
lotes: Impa	cted by pilings of the US-55) bridge.	4						
	REACH (CONDITION	NDEX and S	TREAM CON	DITION UNI	TS FOR THIS	6 REACH		
		0.						E CONDITION INDEX (CI) >>	2.50



6	File Number	Appli	cant	Stahler Stream Order	8 Digit HUC	Date	Transect #	Transect D	escription																	
		TXD	от	3	12040103	3/21/2018	3	Upstream	- Existing																	
_	Name(s) of Evalu	ator(s)	1			Steam Nan	ne and Type																			
10.00	J. Prescott, A. Greu	iter			East Fork S	an Jacinto Ri	ver - Downstr	eam ("EFD")																		
I. Channel C	Condition: Assess the cross-sec Optimal	tion of the stream ar Subor		the second s	igradation). rginal		oor	Sev	050																	
				2	- J	4	ť	1	5																	
Visual Channel Condition Parameter	Channel shows very little incision or widening and little or no evidence of creation or upprotected banks. Indicators of instability include greater than 30% the Transect, point bars and bankful benches may be point bars and bankful benches may be present and transit barses and bankful benches may be present and transit barses and bankful benches may be present and transit barses and bankful benches may be present and transit barses and bankful benches may be present and transit barses and bankful benches may be present and transit barses and bankful benches present bankful benches present and transit barses and bankful benches		a few areas of active erosion. Indicators of Instability Include vagetative cover or natural rock protection only present along 60-80% of the Transuct, point bars and bankfull		Indicators of Instability Include Vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull		a few areas of active erosion. Indicators of Instability include vegetative cover or natural rock rotection only present along 60-80% of the Transect, point bars and bankfull		a few areas of active erosion. Indicators of Instability include vegotative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull bendhas are likely present and transient		a few areas of active erosion. Indicators of instability include vegetative cover or natural rock stection only present atong 60-80% o ve Transect, point bars and bankfull notes are likely present and transien		a few areas of active erosion, indicators of instability include vegotative cover or natural rock protection only present along 60-80% of live Transect, point bars and bankfull benchos are likely present and transien		a few areas of active erosion. Indicators of instability include vegetative cover or natural rock ofection only present along 60-80% of the Transect, point bars and bankfull		a few areas of active erosion. Indicators of Instability include vegetative cover or natural rock rotection only present atong 60-80% of the Transect, point bars and bankfull		a few areas of active erosion. Indicators of instability include vegotative cover or natural rock ofection only present along 60-80% of he Transect, point bars and bankfull		or has had its course ators of instability use of erosional scars Transect, vegetative sck only found on 40- insect, vertical or les, or nickpoints	vertically or latera Visual indicators o Incision include nea shaltow root dept present along 60-8	dened or inclised with ally unstable banks. I over-widening and ar vertical banks with hs, erostonal scars 10% of the Transect,	Channel is deeply in with vertical or later stream bank. Indic include the streambe below the rooting de vertical or undercut,	al instability in the ators of instability id elevation located pth, both banks are	
	vegetative cover on the banks, stable point bars and bankfull benches may b	e sediment is presen the sizeam bottom access to bankt developed floodplake the reach. Chai	Latong 10-40% of . The stream has full benches or na along portions of nnel may show show a nnel alteration, but notable recovery of suikhead and riprap	associated with present and post may be widening w the channel ar (ransient sedime: 60% of the natt boltorn. The stre access to the i Butkheading or ripr	headcuts may be lons of the channel while other portions of e narrowing, and ints are found in 40- iral stream bod or sam does not have active floodplain. ap is found along 25-	limited to 20-40 substantial sedin uniformed-size n along 60-80% of th bars and bankfull th The stream does no active floodplain, riprap are present a	r or natural rock is % of the Transect, ment deposition of naterial is present e Transect and point banches are absent, to have access to an . Bulkheading and along 50-80% of the resect.	protection or natural along 20% or less o bank is sloughing and raw banks present of Transect and 80%	I rock is only found I the Transect, the d erostonal scars or on 80-100% of the % or more of the d is covered by hent resulting in The stream does	cv																
		4	of the second second		a Transect.		2	1		4.0																
	5 has access to bankfull benches a BUFFERS: Assess both bank Optimal	nd developed floor	dplains. No bulk treas along the er	head or riprap. Nice Transect.	o rginal		2 Dor	Sev	ere																	
lotøs: Stream I	has access to bankfull banches a NBUFFERS: Assess both bank	nd developed floor s' 100-foot riparlan a Subop Native woody community species represent greater than 60% coverage with XO wutlands present within the buffer On attive woody community species represent	aplains. No bulk preas along the en- stimal Native woody community species represent between volt NO wellands present. No	head or riprap. Nife Transect. Mar Natilva woody coo		Pe The buffer is domin of the following: maintained rig croptand, active sparsely vocatait	ated by one or more lavma, movad or lavna, movad or by grazed pasture, d non-maintained	Seve The area to domina surfaces, conven crops, active feed to condit	ted by Impervious il lands, denuded tional Ulfege row ois or compenable																	
lotes: Stream RIPARIAN Riparian Buffers	has access to bankfull benches a BUFFERS: Assess both bank Optimal Native woody species represent greate than 60% of the coverage and watend	nd developed floor s' 100-foot riparlan a Subop Native woody community species with AD wellands present within the buffer OR native woody community	apiains. No bulk meas along the er stimal Native woody community species represent buwen 30-80% coverage with XO wellands	head or riprap. Nife Transect. Mar Natilva woody coo	rginal mmunly represents	Pre The buffer is domin of the following: regularia, activel sparsacji vogatati rea, recantly seec	DOF lavna, moved or hol-way, no-till y grazed pasture,	The area is domina surfaces, oniven corps, active feed i condit	ted by Impervious II lands, denuded Uonai Ulfaga row Lonai Ulfaga row Lonai Ulfaga row Jons.																	
Riparian Buffers Condition Scores	has access to bankfull benches a BUFFERS: Assess both bank Optimal Native woody species represent greate than 60% of the coverage and watend	nd developed floor s' 100-foot riparian a Subop Native woody community species represent greater than 60% coverage with WO wutlands present within the buffer OR native woody community species represent 30-60% coverage with witlands present. No mentenno or grazing activities High = 4.5	apjains. No bulk preas along the er stimal Native woody commonity species represent between 30-80% coverage with XO wellands present. No melidionance or	head or riprap. Nife Transect. Mar Native weedy co tess than 30% maintenance or	rginal mmunly represents	Pe The buffer is domin of the following: maintained rig eropland, active sparsely vegatat area, recently seed other compar	DOF lavns, moved or horkway, no-till y grazed pastule, d non-mainlained de and stabilized or	The area is domina surfaces, mine spo surfaces, convent crops, active feed b	ted by Impervious II lands, denuded Uonai Ulfaga row Lonai Ulfaga row Lonai Ulfaga row Jons.																	
Riparian Buffers Condition Scores	Native woody species represent greater Native woody species represent greater then 60% of the coverage and wottend are present 5	nd developed floor s' 100-foot riparian a Subop Native woody community species represent greater than 60% coverage with WO wutlands present within the buffer OR native woody community species represent 30-60% coverage with witlands present. No mentenno or grazing activities High = 4.5	Iplains. No bulk meas along the en stimal Native woody community species represent between 5040% coverage with NO wetlands present. No maintionence or greating activities.	head or riprap. Nife Transect. Mar Native weedy co tess than 30% maintenance or	rginal mmunly representa coverage villi no grazing activities.	Pe The buffer is domin of the following: maintained rig eropland, active sparsely vegatat area, recently seed other compar	DOF lavins, moved or hear way, notilit y grazed pasture, dr non-maintained de and stabilized able condition,	The area is domina surfaces, oniven corps, active feed i condit	ted by Impervious II lands, denuded Uonai Ulfaga row Lonai Ulfaga row Lonai Ulfaga row Jons.																	
Riparian Buffers Condition Scores	Ass access to bankfull benches a BUFFERS: Assess both bank Optimal Native woody species represent greate than 80% of the coverage and walland are present	nd developed floor s' 100-foot riparian a Subop Native woody community species represent greater than 60% coverage with WO wutlands present within the buffer OR native woody community species represent 30-60% coverage with witlands present. No mentenno or grazing activities High = 4.5	Iplains. No bulk meas along the en stimal Native woody community species represent between 5040% coverage with NO wetlands present. No maintionence or greating activities.	head or riprap. Nife Transect. Mar Native weedy co tess than 30% maintenance or	rginal mmunly representa coverage villi no grazing activities.	Pe The buffer is domin of the following: maintained rig eropland, active sparsely vegatat area, recently seed other compar	atted by one or more lawns, moved or lawns, notill by grazed pasture, y grazed pasture, d non-mainianed de and stabilized or able condition.	The area is domina surfaces, oniven corps, active feed i condit	ted by Impervious II lands, denuded Uonai Ulfaga row Lonai Ulfaga row Lonai Ulfaga row Jons.																	
Riparian Buffers Condition Scores	As access to bankfull benches a BUFFERS: Assess both bank Optimal Native woody species represent greate than 80% of the coverage and waitends are present 5 roody vegetation and no maintone % Riparten Area> 100% Score > 4	nd developed floor s' 100-foot riparian a Subop Native woody community species represent greater than 60% coverage with WO wutlands present within the buffer OR native woody community species represent 30-60% coverage with witlands present. No mentenno or grazing activities High = 4.5	Iplains. No bulk meas along the en stimal Native woody community species represent between 5040% coverage with NO wetlands present. No maintionence or greating activities.	head or riprap. Nife Transect. Mar Native weedy co tess than 30% maintenance or	rginal mmunly representa coverage villi no grazing activities.	Pe The buffer is domin of the following: maintained rig eropland, active sparsely vegatat area, recently seed other compar	DOF asted by one or more lawns, mowel or hod-way, no-bil by gnized pasture, de non-maintained lea and stabilized or able condition.	The area to domina surfaces, onive too crops, active feed to condit 	ted by Impervious si lands, denuded tional tilfage row ote or comparable ions.																	
Riparian Buffers Condition Scores	As access to bankfull benches a BUFFERS: Assess both bank Optimal Native woody species represent present than 80% of the coverage and walland are present 6 Soddy vegetation and no mainton % Riparian Area> 100% Score > 4 % Riparian Area> 100%	nd developed floor s' 100-foot riparian a Subop Native woody community species represent greater than 60% coverage with WO wutlands present within the buffer OR native woody community species represent 30-60% coverage with witlands present. No mentenno or grazing activities High = 4.5	Iplains. No bulk meas along the en stimal Native woody community species represent between 5040% coverage with NO wetlands present. No maintionence or greating activities.	head or riprap. Nife Transect. Mar Native weedy co tess than 30% maintenance or	rginal mmunly representa coverage villi no grazing activities.	Pe The buffer is domin of the following: maintained rig eropland, active sparsely vegatat area, recently seed other compar	DOF lavins, moved or hear way, notilit y grazed pasture, dr non-maintained de and stabilized able condition,	The area is domina surfaces, onive too crops, active feed i condit condit Cl= (Sum % RA * So Rt Bank Cl >	ted by Impervious si lands, denuded tional tilfage row ote or comparable ions. ores*0.011/2: 4.00	BV																
Riparian Buffers Condition Scores otes: Native w Right Bank	As access to bankfull benches a BUFFERS: Assess both bank Optimal Native woody species represent greater than 60% of the coverage and watends are present 5 cody vegetation and no maintenu % Riparten Area> 100% Score > 4	nd developed floor * 100-foot riparlan a Subop Native woody community species represent greater than 60% coverage with AO wetlands present within witlands present within witlands present. No maintands present. No maintands present. No maintands present. No maintands present. No maintands High = 4.5 ance activities.	Iplains. No bulk Ireas along the err Itimal Netive woody commonity species represent between type of a coverage with NO wellands present. No melitionance or grazing activities. Low ≈ 4	head or riprap. Nife Transect. Mar Natius woody co resultion and maintenance or	rginal mmunty rapresents coverage with no grazing activities. 3	Pe The buffer is domin of the following: maintained right sparaely vogate sparaely vogate spar	DOF atted by one or more lawns, mowed or hed vay, no-till by grazed pasture, de nor-maintained and stabilized or able condition.	The area is domina surfaces, onive is crops, active feed i condit condit Condit Condit Cl= (Sum % RA * So Rt Bank Cl > Lt Bank Cl >	ted by Impervious si lands, denuded tional tilfage row ote or comparable ions.	BV 4.00																
RIPARIAN RIPARIAN Buffers Condition Scores otes: Native w Right Bank Left Bank	As access to bankfull benches a BUFFERS: Assess both bank Optimal Native woody species represent greate than 60% of the coverage and watend are present 5 cody vegetation and no maintend % Riparlan Area> 100% Score > 4 VSE: The Transect is assess	e' 100-foot riparlan a Subop Native woody community species represent greater than 60% coverage with AO wetlands present within the buffer OR native woody community abcolas represent 30-60% coverage with witianda present.No meisent.No meisent.No meisent.No High = 4.5 High = 4.5	Iplains. No bulk Ireas along the er Itimal Native woody community species with AO wellands present, No maintionance or grazing activities. Low ≈ 4 Low ≈ 4	head or riprap. Nife Transect. Mar Natikas woody coo rese than 30% maintenance or	rginal mmunty represents coverage with no grazing activities. 3 3 acore assigned	The buffer is domin of the following: realistance of the following: respirate active sparsely vogstate area, recently active other compar- other compar-	Door lated by one or more lawns, mowed or hed-way, no-till y grazed pasture, de non-maintained able condition. 2 100% 100%	The area is domina surfaces, onive teed i coops, active teed i condit condi condit condit condi condi condit condit condit condit condi	ted by Impervious il lands, denuded tota of competable ions. ores*0,01)/2: 4,00 4,00																	
Riparian Buffers Condition Scores otes: Native w Right Bank	As access to bankfull benches a BUFFERS: Assess both bank Optimal Native woody species represent greater than 60% of the coverage and watends are present 5 cody vegetation and no maintenu % Riparten Area> 100% Score > 4	nd developed floor * 100-foot riparlan a Subop Native woody community species represent greater than 60% coverage with AO wetlands present within witlands present within witlands present. No maintands present. No maintands present. No maintands present. No maintands present. No maintands High = 4.5 ance activities.	Iplains. No bulk Irreas along the err Itimal Native woody community species represent between minitionance or grazing activities. Low ≈ 4 Low ≈ 4 Low ≈ 4	head or riprap. Nife Transect. Mar Natikas woody co rese that a ob maintenance or see category s Mar	rginal mmunty rapresents coverage with no grazing activities. 3	Pe The buffer is domin of the following: realistance of the sparsely vogeta- copter a compar- other compar- comp	DOF atted by one or more lawns, mowed or hed vay, no-till by grazed pasture, de nor-maintained and stabilized or able condition.	The area is domina surfaces, onive is crops, active feed i condit condit Condit Condit Cl= (Sum % RA * So Rt Bank Cl > Lt Bank Cl >	ted by Impervious il lands, denuded tonal tilling row oto or compenable lons. ores*0.01)/2: 4.00 4.00 4.00 ere ere ere di ditional. homental silmame assessed are also Aquatic Life Score																	

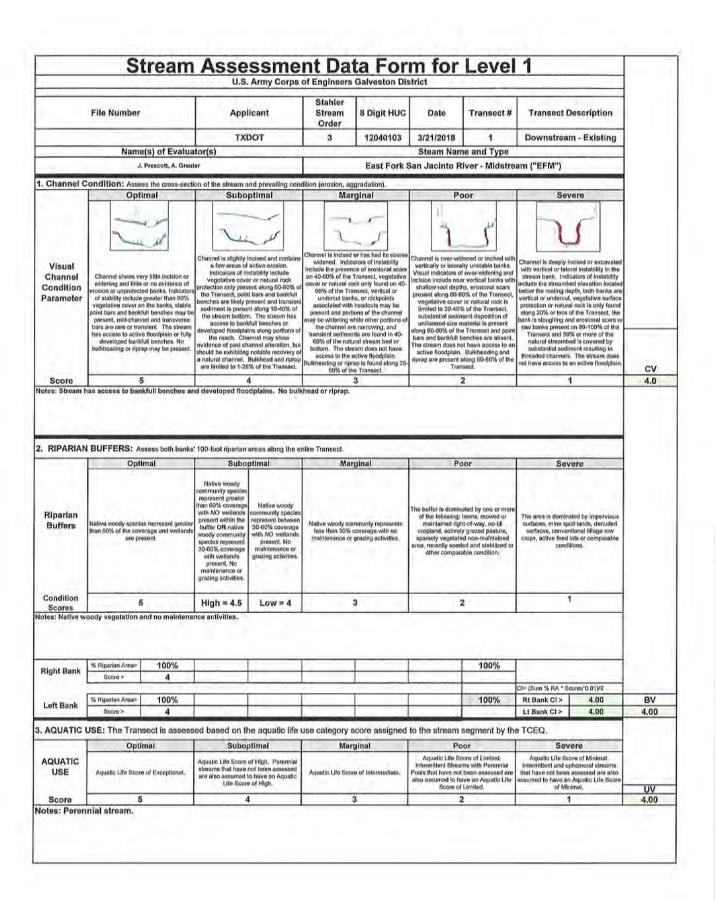
Project #	Applicant		Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description	
					12040103	3/21/2018	3	Upstream - Existing	
CHANNEL	ALTERATION: Stream crossin	gs, riprap, concre	te, gabions, or cor	ncrete blocks, straig	htening of chann	el, channelization,	embankments, s	poil piles, constrictions, livestock	
	Optimal	Subo	ptimal	Marg	inal	Po	or	Severe	
Channel Alteration	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverks, fiprap, buikheads, armor, drop structures or withdrawal structures within the Transect.	impacted by drec levees, culverts, armor, drop struc structures. Eviden may be present, bu stability have recov present, have no o	of the Transect is lging, dams, dikes, riprap, buikheads, tures or withdrawal ce of past alteration at stream pattern and ered. Withdrawals, if observable affect on ow.	Between 30-60% of impacted by dredg levees, cuiverts, ri armor, drop structu structures. Evidence may be present, but stability are begin Withdrawals, if pres observable affect of	ing, dams, dikes, prap, bulkheads, ires or withdrawal e of past alteration stream pattern and ning to recover. ent, may have an on flow, but no	Between 60-90% impacted by dred, levees, culverts, r armor, drop struct structures. Evidence is present, and st stability are n Withdrawals, if pre- observable affect habitat of	ging, dams, dikes, iprap, bulkheads, ures or withdrawal e of past alteration ream pattern and ot recovering. sent, may have an on both flow and	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, cuivers, promp, 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.	AV
SCORE	5		4	3	10. E. 14. 2		2	1	4.00
	istream is altered by US-59	bridge but th	is reach is no	t impacted by	man-made a	iterations.			
	REACH (CONDITION	INDEX and S	TREAM CON	DITION UNI	TS FOR THIS	S REACH		
Contraction of the local division of the loc	AND A DESCRIPTION OF A		A Real and Local Division		and we have been a second of the	A LINE AND A DESCRIPTION OF A DESCRIPTIO	and a state of the	the second se	4.00



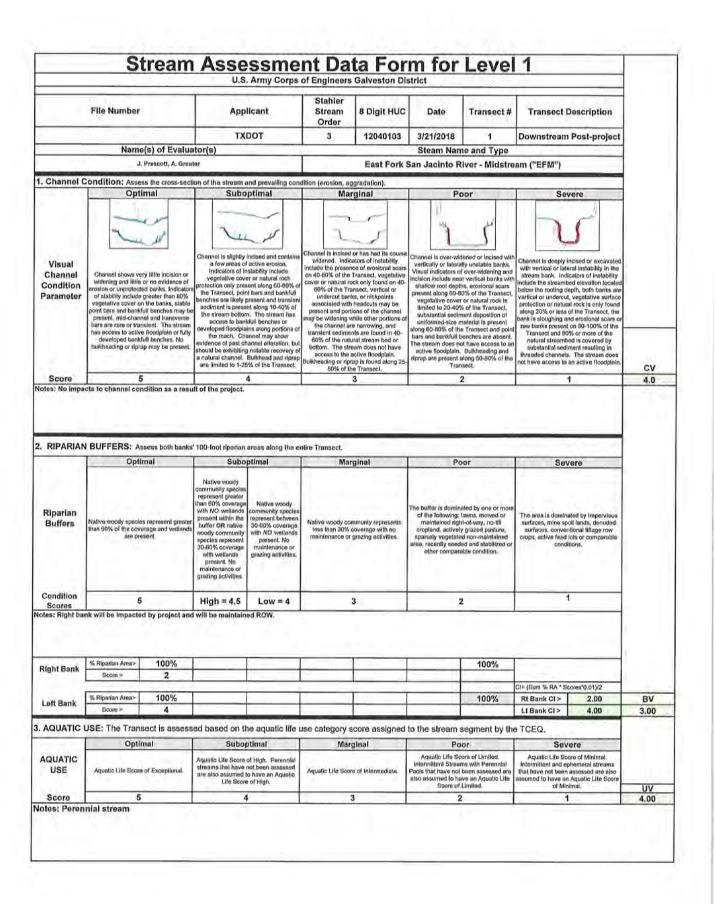


Applicant	10 X 20 Y	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description	
		1.1.1.1.1.1.1		12040103	3/21/2018	3	Upstream - Post-project	
ALTERATION: Stream crossin	ngs, riprap, concre	te, gablons, or co	ncrete blocks, strak	phtening of chann	el, channelization.	, embankments, s	poil piles, constrictions, livestock	
Optimal	Subo	ptimal	Marg	inal	Po	or	Severe	
Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, jevees, culverks, igrap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	impacted by dree levees, culverts, armor, drop struc structures, Evider may be present, be stability have reco- present, have no	fging, dams, dikes, riprap, bulkheads, tures or withdrawal ice of past alteration ut stream pattern and rered. Withdrawals, i observable affect on	Impacted by dredg levees, culverts, ri armor, drop structu structures. Evidence may be present, but stability are begin Withdrawals, if pre- observable affec	ing, dams, dikes, iprap, bulkheads, ires or withdrawal e of past alteration stream pattern and ining to recover. sent, may have an t on flow, but no	Impacted by dredy levees, culverts, r armor, drop struct structures. Evidenc is present, and st stability are n Withdrawats, if pre observable affect	ging, dams, dikes, riprap, buikheads, ures or withdrawal ae of past alteration ream pattern and ot recovering, sent, may have an t on both flow and	Between 90-100% of the Transect is impacted by diredging, dama, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large encught to have severe loss of flow and cause little to no habitat or biota.	AV
5	1	4	3			2	1	4.00
annel alterations as a resu	It of the proje	oct.					_	
		INDEX and S						
	Applicant ALTERATION: Stream crossin Optimal Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culvers, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect. §	Applicant ALTERATION: Stream crossings, riprap, concre Optimal Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No bulkheads, armor, drop structures or withdrawal structures within the Transect.	Applicant Locality ALTERATION: Stream crossings, riprap, concrete, gabions, or cor Optimal Suboptimal Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, fripap, butkheads, armor, drop structures evidence of past alteration may be present, but stream pattern and withdravals structures within the	Applicant Locality Cowardin Class. ALTERATION: Stream crossings, riprap, concrete, gablons, or concrete blocks, strateget Alternation of the stream has unaltered pattern or has normalized. No hardening absent. Stream has unaltered pattern or has normalized. No bulkheads, armor, drop structures, Evidence of past alteration of withdrawal structures within the Transect. Between 2000 and the structures is inpacted by dredging, dams, dikes, armor, drop structures, for structures, for alternation or withdrawal structures within the Transect. Between 2000 and the structures is of the structures. Between 2000 and the structures is of the structures. Between 2000 and the structures is of the structures. Between 2000 and the structures is of the structures. Between 2000 and the struc	Applicant Locality Cowardin Class. HUC ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of chann 12040103 ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of chann Marginal Marginal Channelization, dredging, alteration of handening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culvers, riprap, buikheads, armor, drop structures culvers, pran, buikheads, armor, drop structures, culvers, riprap, buikheads, armor, drop structures, to transce or past alteration may be present, but stream pattern and may be present, but stream pattern and may be present, but no observable affect on flow, but no observable affect on flow, but no observable affect on habilat or biota. 5 4 3	Applicant Locality Cowardin Class. HUC Date ALTERATION: Stream crossings, riprap, concrete, gablons, or concrete blocks, straightening of channelization 12040103 3/21/2018 ALTERATION: Stream crossings, riprap, concrete, gablons, or concrete blocks, straightening of channelization Marginal Pc Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culvers, friprap, buikheads, armor, drop structures or withdrawal adms, dikes, levees, culvers, friprap, buikheads, armor, drop structures or withdrawal armor, drop structures. Evidence of past alleration may be present, but stream pattern and stability nave recovered. Withdrawals, if present, may have an observable affect on flow, but on most be used affect on flow, but on buikheads armor, drop structures, buikheads, armor, drop structures, Evidence of past alleration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but on observable affect on flow, but on the structure affect on flow, but on observable affect on flow, but on the structure affect on flow, but on observable affect on flow, but on the structure affect on f	Locality Cowardin Class. HUC Date Transect # Image: Covardin Class. 12040103 3/21/2018 3 ALTERATION: Stream cossings, riprap, concrete, gablons, or concrete blocks, straightening of channel, channelization, embankments, s Development Poor Channelization, dredging, alteration or hardening absent. Stream harden and absent. Stream harden and absent. Stream, buikheads, armor, drop structures or withdrawal structures. Evidence of past alteration and stream pattern and stability may be present, but Streads, armor, drop structures or withdrawal structures. Evidence of past alteration and stability may be present, but Streads, armor, drop structures or withdrawal structures. Evidence or past alteration and stability may be present, but stream pattern and stability me beginning to recovering. Withdrawals, if present, may have an observable affect on flow, but or biola. Stability may for the transect is flow. Bilow 3 2	Applicant Locality Cowardin Class. HUC Date Transect # Transect # ALTERATION: Stream crossings, riprap, concrete, gablons, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock 3 Upstream - Post-project ALTERATION: Stream crossings, riprap, concrete, gablons, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock Poor Severe Channelization, dredging, alteration or hardening absent. Stream hard ong absent. Stream hard harden absent, bit stream pattern and stability are or teocovering. Withdrawals, armor, drop structures or withdrawals, armor, drop structures or withdrawal armor, drop structures or withdrawal armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are or teocovering. Withdrawals, if present, may have an observable affect on flow, with one observable affect on flow. Between 30-0100% of the Transect is impacted by dredging, dams, dikes, large encupt hore structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are or teocovering. Between 30-0100% of the transect is inspected by dredging, dams, dikes, large encupt hore structures or withdrawal is present, but stream pattern and stability are or teocovering. Between 50-00% of the transect is inspected by dredging, dams, dikes, large encupt hore stability are or teocovering. Between 50-00% of the transect is inspected by dredging, d





Project#	Applicant		Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description	
					12040103	3/21/2018	1	Downstream - Existing	
. CHANNEI	LALTERATION: Stream crossin	gs, riprap, concre	te, gabions, or co	ncrete blocks, strai	ghtening of chann	el, channelization	, embankments, s	poil piles, constrictions, livestock	
	Optimal	Subo	ptimal	Marg	ginal	Po	or	Severe	
Channel Alteration	Channelization, dredging, alteration or hardening absent. Stream has levees, cuivets, forap, buil unaitered pattern or has normalized. No armor, dros psurctures or will			Between 30-60% impacted by dredg levees, culverts, r armor, drop struct structures, Evidenc may be present, but stability are begin Withdrawals, if pre- observable affect of observable affect of	ping, dams, dikes, iprap, bulkheads, ures or withdrawal e of past alteration stream pattern and nning to recover, sent, may have an t on flow, but no	Impacted by dred levees, culverts, armor, drop struct structures. Evidem is present, and s stability are n Withdrawals, if pre	tream pattern and ot recovering. isent, may have an t on both flow and	Between 90-100% of the Transact is impacted by dredging, dams, dikes, levees, cuiverts, 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 blota.	AV
SCORE	5		4	3			2	1	4.00
lotes: Dowr	ıstream is altered by US-59								
	REACH C	CONDITION I	NDEX and S	TREAM CON	DITION UNI	TS FOR THIS	S REACH		
								E CONDITION INDEX (CI) >>	4.00

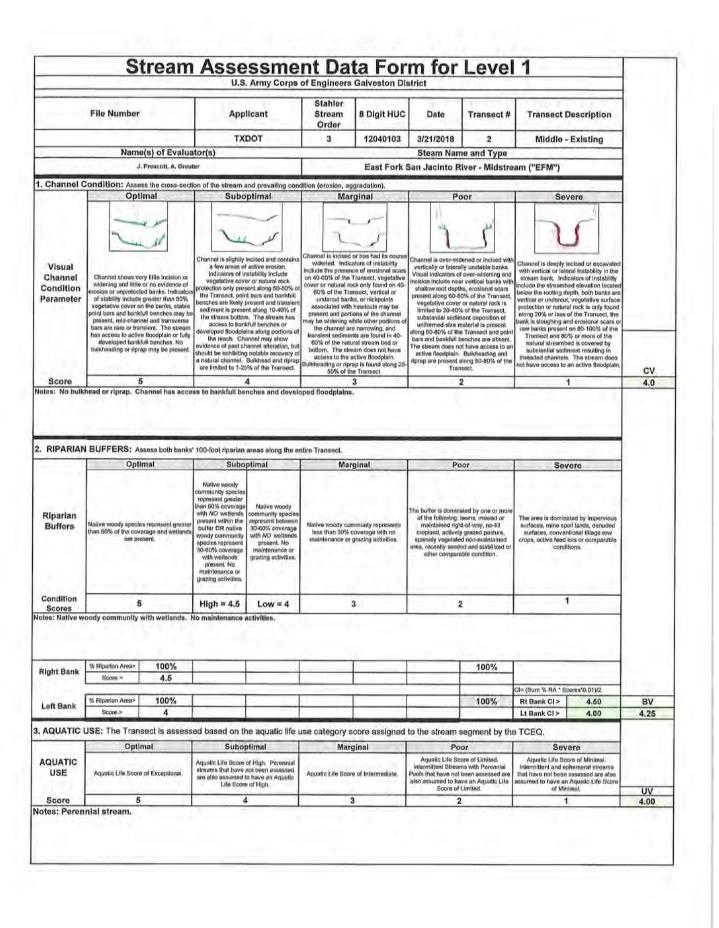


Project #	Applicant		Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description	
					12040103	3/21/2018	1	Downstream Post-project	
. CHANNE	ALTERATION: Stream crossin	ngs, riprap, concre	le, gabions, or co	icrete blocks, strak	phtening of chann	el, channelization	embankments, s	spoil piles, constrictions, livestock	
	Optimal	Subo	ptimal	Marg	inal	Po	or	Severe	
Channel Alteration		impacted by dred levees, culverts, armor, drop struct structures. Evidem may be present, bu stability have recov present, have no o	Impacted by dredging, dame, dikes, Impacted by dredging, dame, dikes, Ievees, culverts, riprap, butkheads, armor, drop structures or withdrawal structures, Evidence of past alteration may be present, but stream pattern and present, have no observable affect on from		of the Transect is ing, dams, dikes, jprap, bulkheads, rees or withdrawal a of past alteration stream pattern and ining to recover. sent, may have an t on flow, but no in habitat or biota.	Between 60-90% impacted by dred, levees, culverts, i armor, drop struct structures. Evidenc is present, and st stability are n Withdrawals, if pre observable affect habitat of	ping, dams, dikes, iprap, bulkheads, ures or withdrawal e of past alteration ream pattern and ot recovering, sent, may have an on both flow and	Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, iprap, 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 biola.	AV
SCORE	5		1	3			2	1	4.00
otes: no ch	5 4 Innel alterations as a result of the project.			TREAM CON			PEACH		
	REACH	CONDITION	NDEX and S	TREAM CON	DITION UNI	IS FOR THIS	REACH		
								E CONDITION INDEX (CI) >>	3.7





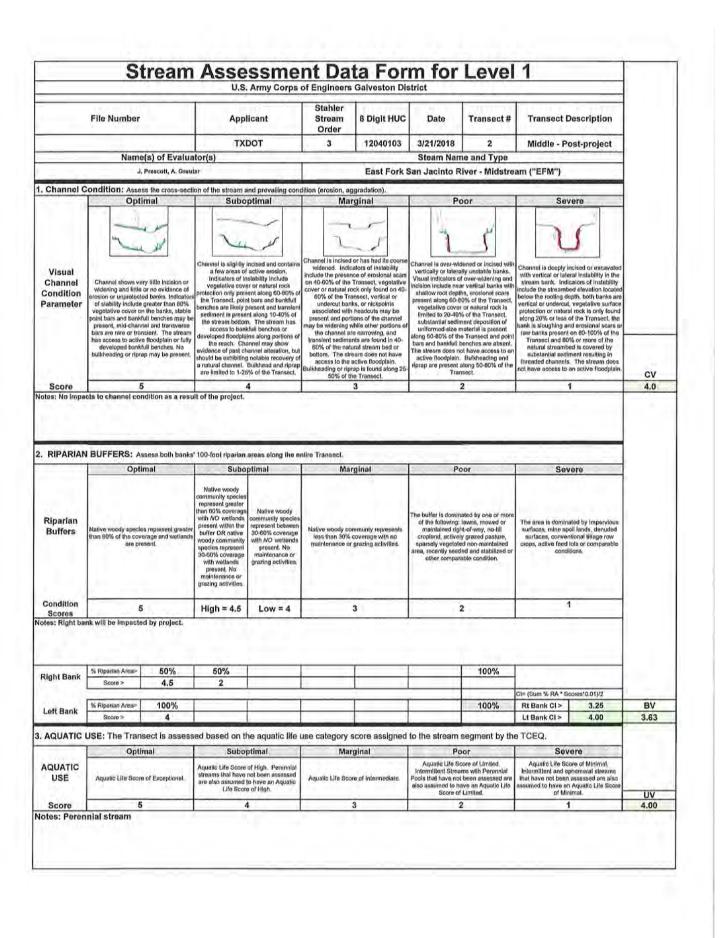
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Applicant	1.000	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description	
				12040103	3/21/2018	2	Middle - Existing	
ALTERATION: Stream crossin	gs, riprap, concret	e, gabions, or co	ncrete blocks, strai	ghtening of chann	el, channelization,	embankments, s	poil piles, constrictions, livestock	
Optimal	Subor	otimal	Marg	ginal	Po	or	Severe	
Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, cuiverts, førap, buikheads, armor, drop structures or withdrawal structures within the Transect.	Impacted by dredg levees, culverts, r armor, drop struct structures. Evidenc may be present, but stability have recove present, have no of	ing, dams, dikes, iprap, bulkheads, ires or withdrawal e of past alteration stream pattern and red. Withdrawals, i servable affect on	Impacted by dredg levees, culverts, r armor, drop structu structures. Evidenc may be present, but stability are begin Withdrawals, if pre- observable affec	plng, dams, dikes, fprap, bulkheads, ures or withdrawal e of past alteration stream pattern and nning to recover. sent, may have an t on flow, but no	Impacted by dredg levees, culverts, r armor, drop struct structures, Evidenc is present, and st stability are n Withdrawals, if pre observable affect	ging, dams, dikes, iprap, bulkheads, ures or withdrawal e of past alteration ream pattern and ot recovering. sent, may have an on both flow and	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 biola.	AV
5	4		3	1	2	2	1	4.00
	0			REACH				
REACH	SONDITION	NDEX and a	STREAM CON	DITION ON	TS FOR THIS	REAGH		
	Optimal Channelization, dredging, alteration or hardening absent. Stream has unaltered patition or has nomalized. No dams, dixes, levees, cuiverts, riprap, buikheads, armor, drop structures or withdrawal structures within the Transect. 5 apacted by man-made struct	Optimal Subop Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has romainted. No dams, dikes, levees, cuiverts, riprap, buikheads, armor, drop structures or withdrawai structures within the Transect. Less than 30% of impacted by dredging buikheads, armor, drop structures structures. Evidence usability have recove present, have no of flo 5 4 appacted by man-made structures. Stream	Optimal Suboptimal Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized dams, dixes, tevees, culverts, riprap, buikheads, armor, drop structures or withdrawal structures within the Transect. Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, buikheads, structures. Evidence of past alteration stability have recovered. Withdrawals, i present, but stream pattern and flow. 5 4 apacted by man-made structures. Stream pattern is stability	Optimal Suboptimal Marg Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has romained, No dams, dikes, levees, cuiverts, riprap, buikheads, unaltered patternes or withdrawai structures. Evidence of past alteration withdrawai structures within the Transect. Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, cuiverts, riprap, buikheads, auror, drop structures or withdrawais, if present, have no observable affect on flow. Between 30-60% impacted by dredging, dams, dikes, levees, cuiverts, riprap, structures of withdrawais, if present, have no observable affect on flow. Between 30-60% impacted by dredging, dams, dikes, levees, cuiverts, riprap, stability have recovered. Withdrawais, if present, have no observable affect on flow. Between 30-60% impacted by man-made structures. Stream pattern is stable.	ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of chann Optimal Suboptimal Marginal Channelization, dredging, alteration in hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, teres, culvers, riprap, buikheads, armor, drop structures or withdrawal structures structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Between 30-60% of the Transect is impacted by dredging, dams, dikes, teres, culvers, riprap, buikheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability area forcy area (Withdrawals, if present, have no observable affect on flow. Between 30-60% of the Transect is impacted by thereas or withdrawal structures. Evidence of past alteration and stability area forcy area (with stream pattern and flow. Between 30-60% of the Transect is impacted by man-made structures or withdrawal structures. Evidence of past alteration and stability area (stream pattern and flow. 5 4 3	ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, Optimal Suboptimal Marginal Potematical processing Channelization, dredging, alteration in ardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, teves, cuivers, riprap, buikheads, armor, drop structures or withdrawal structures for structures or structures or 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. Between 30-60% of the Transect. Between 60-90% of the Transect is impacted by dredging, dams, dikes, teves, cuivers, friprap, buikheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Between 30-60% of the Transect. Between 60-90% of the Transect is impacted by dredging, dams, dikes, teves, cuivers, friprap, buikheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Between 30-60% of the Transect. Betwee	ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, st Optimal Suboptimal Marginal Poor Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, teresc, cuivers, riprap, buikheads, armor, drop structures or withdrawal dams, dikes, teresc, cuivers, riprap, buikheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are not recovering. Between 60-90% of the Transect is impacted by dredging, dams, dikes, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are not recovering. Between 60-90% of the Transect is impacted by dredging, dams, dikes, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are not recovering. Between 30-60% of the Transect is impacted by dredging, dams, dikes, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are not recovering. Invesent, and stream pattern and stability are not recovering. Invesent, and stream pattern and stability are beginning to recover. Invesent, and stream pattern and stability are beginning to recover observable affect on flow, but Invesent, have an observable affect on habitat or biola. 5 4 3 2	ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock Optimal Suboptimal Marginal Poor Severe Channelization, dredging, alteration hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, transported by dredging, dams, dikes, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are proceeded. Withdrawals, in present, have no observable affect on flow. Between 30-00% of the Transect is impacted by dredging, dams, dikes, armor, drop structures or withdrawal structures. Evidence of past alteration is be present, but stream pattern and stability are proceeded. Withdrawals, in present, have no observable affect on habitat or blota. Between 00-100% of the Transect is impacted by dredging, dams, dikes, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are proceeded. Withdrawals, if present, may have an observable affect on habitat or blota. Between 00-100% of the Transect is impacted by dredging, dams, dikes, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are proceeded. Between 00-100% of the transect is independent of the past severe is os of flow and cause little to no habitat or blota. 5 4 3 2 1 5 4 3 2 1







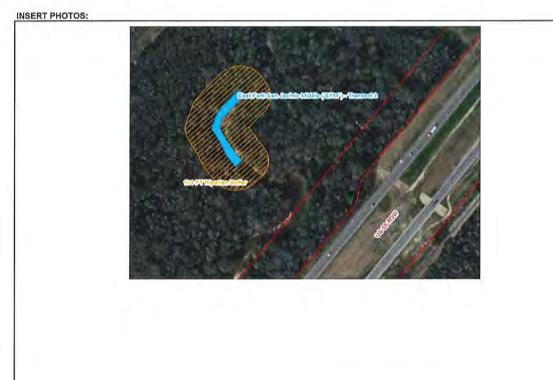
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Project #	Applicant		Locality	Cowardin Class.	HUC	Date	Transect#	Transect Description	
					12040103	3/21/2018	2	Middle - Post-project	
. CHANNEI	LALTERATION: Stream crossin	igs, riprap, concre	te, gabions, or co	ncrete blocks, stral	ghtening of chann	el, channelization,	embankments, s	poil piles, constrictions, livestock	
	Optimal	Subo	ptimal	Marg	inal	Po	or	Severe	
Channel Alteration	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverkis, riprap, buikheada, armor, drop structures or withdrawal structures within the Transoct.	Impacted by dred levees, culverts, armor, drop struct structures. Evidem may be present, bu stability have recov present, have no d	of the Transect is ging, dams, dikes, riprap, buikheads, ures or withdrawal a of past alteration t stream pattern and ered. Withdrawals, i bservable affect on aw.	Between 30-60% impacted by dredg levees, culverts, r armor, drop structi structures. Evidenc may be present, but stability are begin Withdrawals, if pre- observable affect of observable affect of	ing, dams, dikes, iprap, bulkheads, ures or withdrawal e of past alteration stream pattern and ming to recover. sent, may have an t on flow, but no	Between 60-90% Impacted by dredg levees, cuiverts, r armor, drop struct structures. Evidenc is present, and si stability are n Withdrawals, if pre observable affect habitat r	ping, dams, dikes, iprap, buikheads, ares or withdrawal e of past alteration ream pattern and bit recovering, sent, may have an on both flow and	Between 90-100% of the Transect is impacted by dredging, dama, dikes, levees, cuiverts, fiprap, builkheads, 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 biots.	AV
SCORE	5		4	3		1	2	1	4.00
lotes: Chan	nel alteration will not occu								
	REACH	CONDITION	NDEX and S	STREAM CON	DITION UNI	TS FOR THIS	REACH		

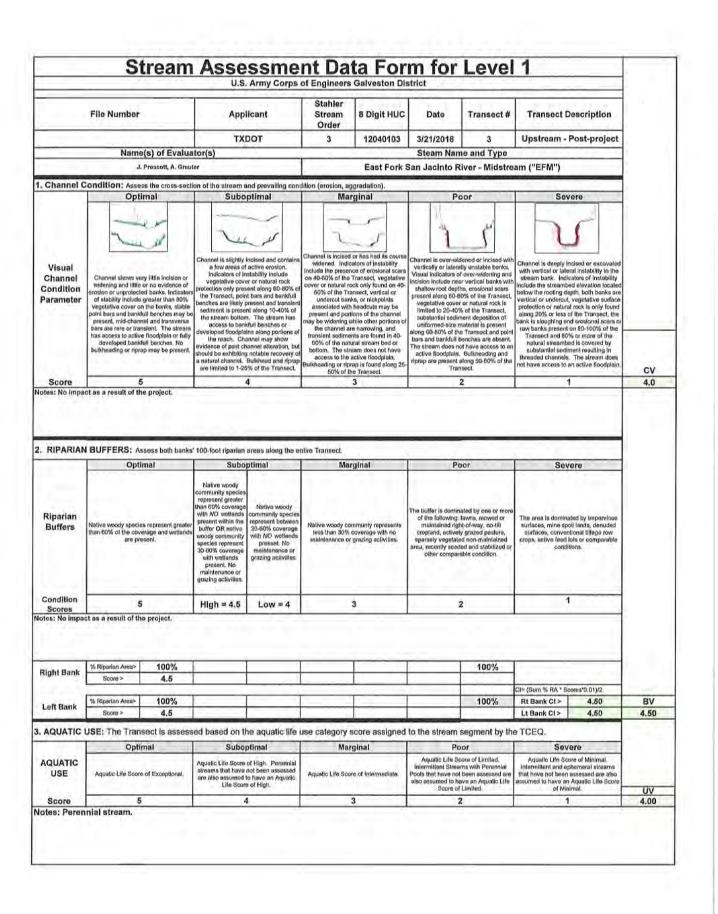


	Transect Description	Transect #	Date	8 Digit HUC	Stahler Stream	licant	Appl	ber	File Number	
	Upstream - Existing	3	3/21/2018	12040103	Order 3	DOT	тхі		10.01 1.00	
	opstream - Existing	ne and Type		12040100				lame(s) of Evalua	Nam	
	m ("EFM")	iver - Midstrea	San Jacinto R	East Fork S			ar	J. Prescott, A. Greut		
						the second s	and the second se	Assess the cross-section	and the second second second second	Channel C
	Severe	por	Pa	ginal	Mar	ptimal	Subo	Optimal	Ор	
	J	5	1	or has had its course	Changel is included	1	Nu		1	
	Include the streambod extention include below the rooting depth, both banks are vertical or undercut, vegetalive surface protection or natural rock is only found along 20% or tess of the Transect, the bank is sloughing and erostonal scars or raw banks present on 80-100% of the Transect and 80% or more of the cabulat dispetable to exercise the	I over-widening and r vertical banks with hs, arosional scare 0% of the Transoct, ternatural reack is 4 of the Transect, ternaterial is present 9 Transect and point 9 Transect and point banches are absent, banks are absent, bang 50-80% of the	vertically or lateral visual indicators of incision include nea shallow root depth present along 60-80 vegatative cover ilmited to 20-40% substantial sedim uniformed-size m along 60-80% of the bars and bankfull b The stream dees no active floodplain.	sters of instability ce of erosional scars fransect, vegetative sk only found on 40- need, vertical or sect, vertical or need, vertical or need, vertical or need, vertical or need, vertical or need, vertical or need, vertical or net or need, and the are found in 40- ral stream bed or and does not tave etive floodplain. ps is found along 25-	widened, Indice include the present on 40-60% of the cover or natural ro 60% of the Tra- undercul bank associated with present and port may be widening w the channel an transient sedimer 60% of the nature bottom. The store access to the a	Channel shows very little incluion or dening and little or no evidence of sion or unprotect banks, indicators of instability incluido very little verosion, stability incluido developed bankful benches or developed locopalina stalong portions of the reach. Channel may show evidence of past channel alterration, but should be exhibiting notable recovery of an situral channed. Butkinead and i prop are linkitie to 1-2554 of the Transect.		widening and little erosion or unprotect of stability includ vegetative cover - point bars and bant present, mid-chat bars are rare or tra- hits access to acti- developed bant	Visual Channei Condition Paraméter	
cv	not have access to an active floodplain.	ISBCL						5		
CV 4.0	not have access to an active floodplain. 1 Severe	2	Po	3	ped floodplains lire Transect		as to bankfull bei 100-loot riparian Subo Native woody	p. Channel has acce S: Assess both banks Optimal	head or riprap. C	
	1	2 bor lawns, mowed or t-gi-way, no-till y grazed pasture, dr non-maintained ed and stabilized or		3 ginal	ped floodplains lire Transect. Mar Native woody cor Jess than 30%	areas along the er ptimal	ss to bankfull ber 100-lool riparian Suboj	p. Channel has acce S: Assess both banks	Nallva woody spec	otes: No bulki
	1 Severe The area is dominated by impervious surfaces, mine spoil lands, denuded surfaces, conventional tillage row crops, active feed to los or comparable	2 bor lawns, mowed or t-gi-way, no-till y grazed pasture, dr non-maintained ed and stabilized or	Po The buffer is domina of the following: maintained righ cropland, actively sparsely vegetale area, recently seed other compara	3 ginal nmunity reprosents coverage with no	ned floodplains life Transect. Mar Native woody cor Jess then 30% - maintenance or	areas along the er ptimal Native woody community species represent between 30-60% coverage with VO wellands present. No melintenance or	to bankfull ber 100-fool tiparian Subo Nalive woody represen grader with vol weitands present with with the buffer OR nalive woody community species represent 30-60% coverage with watends present. No maintenance or	p. Channel has acce S: Assess both banks Optimal species represent greater is coverage and wellands	Nullve woody spec than 60% of the co are p	RIPARIAN RIPARIAN Buffers Condition
	1 Severe Severe surfaces, mine spoil lands, denuded surfaces, conventional illings row crops, active feed tots or comparable conditions	2 bor atad by one or more atad by one or more at-of-way, no-till y grazed pasture, d non-maintained ed and stabilized or able condition.	Po The buffer is domina of the following: maintained righ cropland, actively sparsely vegetale area, recently seed other compara	3 ginal overage with no precing activities.	ned floodplains life Transect. Mar Native woody cor Jess then 30% - maintenance or	Areas along the er ptimal Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or greazing activities.	s to bankfull ber 100-fool tiparian Subo Nellys woody represent greater than 60% coverage with NO willands present With the buffer OR nellye woody community species represent 30-60% coverage with wellands present. No maintenance or grazing activities. High = 4.5	p. Channel has acce S: Assess both banks Optimal species represent greater is coverage and wellands are present.	Nullya woody spec Draw 80% of the co are p	RIPARIAN RIPARIAN Buffers Condition Scores
	1 Severe Severe surfaces, mine spoil lands, denuded surfaces, conventional illings row crops, active feed tots or comparable conditions	2 bor atad by one or more atad by one or more at-of-way, no-till y grazed pasture, d non-maintained ed and stabilized or able condition.	Po The buffer is domina of the following: maintained righ cropland, actively sparsely vegetale area, recently seed other compara	3 ginal overage with no precing activities.	ned floodplains life Transect. Mar Native woody cor Jess then 30% - maintenance or	Areas along the er ptimal Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or greazing activities.	s to bankfull ber 100-fool tiparian Subo Nellys woody represent greater than 60% coverage with NO willands present With the buffer OR nellye woody community species represent 30-60% coverage with wellands present. No maintenance or grazing activities. High = 4.5	p. Channel has acce S: Assess both banks Optimal species represent greater re coverage and wetlands are present. 5 shifty with watlands. I 100%	Nullya woody spec Draw 80% of the co are p	RIPARIAN RIPARIAN Buffers Condition Scores
4.0	1 Severe The area is dominated by impervious surfaces, mine spoil lands, danueled surfaces, conventional tillage row crops, solive feed tots or comparable conditions. 1 1 (Sum % RA * Scores*0.01)/2	2 ated by one or more lawns, mowed or t-of-way, no-till y grazed pasture, dr non-maintained ed and strabilized or table condition.	Po The buffer is domina of the following: maintained righ cropland, actively sparsely vegetale area, recently seed other compara	3 ginal overage with no precing activities.	ned floodplains life Transect. Mar Native woody cor Jess then 30% - maintenance or	Areas along the er ptimal Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or greazing activities.	s to bankfull ber 100-fool tiparian Subo Nellys woody represent greater than 60% coverage with NO willands present With the buffer OR nellye woody community species represent 30-60% coverage with wellands present. No maintenance or grazing activities. High = 4.5	p. Channel has acce S: Assess both banks Optimal species represent present species represent and wellands are present. 5 inity with wetlands. 1 100% 4,5	Nullve woody spect Nullve woody spect than 60% of the co are p are p sody community % Ripartan Area> Score >	Riparian Buffers Condition Scores
	1 Severe The area is dominated by impervious surfaces, conventional itilings row croops, active feed tots or comparable conditions.	2 bor laws, nowed or t-of-way, no-till y grazed pasture, dr non-maintained de and stabilized or able condition. 2 100%	Po The buffer is domina of the following: maintained righ cropland, actively sparsely vegetale area, recently seed other compara	3 ginal overage with no precing activities.	ned floodplains life Transect. Mar Native woody cor Jess then 30% - maintenance or	Areas along the er ptimal Native woody community species represent between 30-60% coverage with NO wetlands present. No maintenance or greazing activities.	s to bankfull ber 100-fool tiparian Subo Nellys woody represent greater than 60% coverage with NO willands present With the buffer OR nellye woody community species represent 30-60% coverage with wellands present. No maintenance or grazing activities. High = 4.5	p. Channel has acce S: Assess both banks Optimal species represent greater the coverage and wellands are present. 5 inity with wetlands. 1 100% 4,5	BUFFERS: / DPFERS: / Nallva woody spec (han 80% of the co are p are p	RIPARIAN RIPARIAN Buffers Condition Scores
4.0 BV	1 Severe The area is dominated by impervious surfaces, constructional tillage row crops, active feed tots or comparable conditions. 1 1 1 1 It sources '0.01/y2 Rt Bank Cl > 4.50 Lt Bank Cl > 4.50	2 ated by one or more lawns, mowed or t-of-way, no-till y grazed pasture, dr non-maintained e and stabilized or able condition.	Po The buffer is domina of the following: maintained righ cropland, actively spartedy vogotied area, recently seed other compara	3 	Native woody con less than 30% maintenance or	areas along the er ptimal Native woody community species represent between present, between present, No melinienance or grazing activities. Low = 4. activities.	100-fool tiparian Subo Native woody ocommunity species represent graterin than 60% ocverage with AO welliands present within the species represent 30-60% coverage with wold on Rative woody community species represent 30-60% coverage with wold and present. No maintenance or grazing activities.	p. Channel has acce S: Assess both banks Optimal species represent greater is coverage and wellands rep greant. 5 inity with wetlands. I rea> 100%	Nallva woody spec Nallva woody spec Uhan 80% of the co are p are p coody community % Ripartan Area> Score >	RIPARIAN RIPARIAN Buffers Condition Scores Tea: Native we
4.0 BV	1 Severe The area is dominated by impervious surfaces, constructional tillage row crops, active feed tots or comparable conditions. 1 1 1 1 It sources '0.01/y2 Rt Bank Cl > 4.50 Lt Bank Cl > 4.50	2 alted by one or more lawns, mowed or t-gi-way, no-till y grazed pasture, d non-maintained ed and stabilized or able condition. 2 100% 100% segment by the	Po The buffer is domina of the following: maintained righ cropland, actively spartedy vogotied area, recently seed other compara	3 ginal munty represents coverage with no grazing activities. 3 3 core assigned	Native woody cor less than 30% maintenance or	areas along the er ptimal Native woody community species represent between present, between present, No melinienance or grazing activities. Low = 4. activities.	100-fool tiparian Subo Native woody community species represent greater than 60% coverage with AO wellands present with AO wellands buffer OR native woody community species represent 30-60% coverage with wellands present with wellands present with wellands are species and the species present with wellands are species and the species with wellands are species and the species and the species with wellands are species and the species are species and the species are species and the species are species and the species and the species are species and the species and the species are species and the species are species and the species are species and the species are species and the species are species and the species are species and the species are species are species are species and the species are species are species are species are species are species are species are species are species are speci	p. Channel has acce S: Assess both banks Optimal species represent greater in coverage and wellands are present. 5 inity with watlands. 1 reas 100% 4.5	BUFFERS: / DPFERS: / Opf Nallve woody spec (han 80% of the co- are p are p oody community % Ripartan Area> Score > % Ripartan Area> Score > JSE: The Tran	RIPARIAN RIPARIAN Riparian Buffers Condition Scores east Native we ight Bank
4.0 BV	1 Severe The area is dominated by impervious surfaces, conditionated by impervious surfaces, conditionated by impervious conditions. Impervious surfaces, conditionated by impervious conditions. Conditionated by impervious surfaces, conditionated by impervious conditions. Impervious surfaces, conditionated by impervious conditions. Conditionated by impervious surfaces, conditionated by impervious conditions. Impervious surfaces, conditionated by impervious conditions. Impervious surfaces, conditionated by impervious conditions. Impervious surfaces, conditions.	2 alied by one or more lawns, mowed or t-gi-way, no-till y grazed pasture, d non-maintained ed and stabilized or able condition. 2 100% 100% Segment by the oor core of Limited, mswith Perential been masses of are we an Aquatic Life	Po The buffer is domina: of the following: maintained ative sparsely vegeties sparsely vegeties other compara other compara 2	3 ginal overage with no grazing activities. 3 3 core assigned	Native woody cor less than 30% maintenance or	Areas along the er ptimal Native woody community species represent between present. No mentionance or greating activities. Low = 4 activities. he aquatic life to ptimal of High. Perennial no have on Aquatic	100-fool tiparian Subo Native woody community species represent greater than 60% coverage with AO wellands present with AO wellands buffer OR native woody community species represent 30-60% coverage with wellands present with wellands present with wellands are species and the species present with wellands are species and the species with wellands are species and the species and the species with wellands are species and the species are species and the species are species and the species are species and the species and the species are species and the species and the species are species and the species are species and the species are species and the species are species and the species are species and the species are species and the species are species are species are species and the species are species are species are species are species are species are species are species are species are speci	p. Channel has acce S: Assess both banks Optimal species represent greater is coverage and wetlands are present. 5 inity with watlands. 1 (100% 4.5 (100% 4.5 (100%) 5 (100%) 5 (100%)	BUFFERS: / Opi Nallve woody spec (han 60% of the co- are p are p oody community % Ripartan Area> Score > % Ripartan Area> Score > JSE: The Tran Opi	RIPARIAN RIPARIAN Buffers Condition Scores tes: Native we Right Bank

Project #	Applicant		Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description	
					12040103	3/21/2018	3	Upstream - Existing	
. CHANNEI	LALTERATION: Stream crossin	igs, riprap, concre	te, gabions, or co	ncrete blocks, straig	phtening of chann	el, channelization,	embankments, s	poil piles, constrictions, livestock	
	Optimal	Subo	ptimal	Marg	inal	Po	or	Severe	
Channel Alteration	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverks, forpap, buikheads, armor, drop structures or withdrawal structures within the Transect.	impacted by dred levees, cuiverts, armor, drop struct structures. Evidems may be present, bu stability have recov present, have no o	of the Transect is ging, dams, dikes, riprap, bulkheads, ures or withdrawai e of past alteration t stream pattern and ered. Withdrawais, i bservable affect on ww.	Between 30-60% of impacted by dredg levees, culverts, ri armor, drop structu structures. Evidence may be present, but stability are begin Withdrawals, if pre- observable affect of observable affect of	Ing, dams, dikes, iprap, bulkheads, ires or withdrawal e of past alteration stream pattern and uning to recover. sent, may have an t on flow, but no	Between 60-90% Impacted by dredy levees, culverts, r armor, drop struct structures. Evidence is present, and st stability are n Withdrawals, if pre observable affect habitat of	ping, dams, dikes, iprap, bulkheads, ures or withdrawal e of past alteration ream pattern and ot recovering, sent, may have an on both flow and	Between 90-100% of the Transect is impacted by dredging, dams, dikes, leves, culverts, riprap, buikheads, 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 biola.	AV
SCORE	5		4	3			2	1	4.00
Notes: Not in	mpacted by man-made stru	ctures. Strea	m pattern is s	itable.					
	REACH	CONDITION	NDEX and S	TREAM CON	DITION UNI	TS FOR THIS	REACH		-
								E CONDITION INDEX (CI) >>	

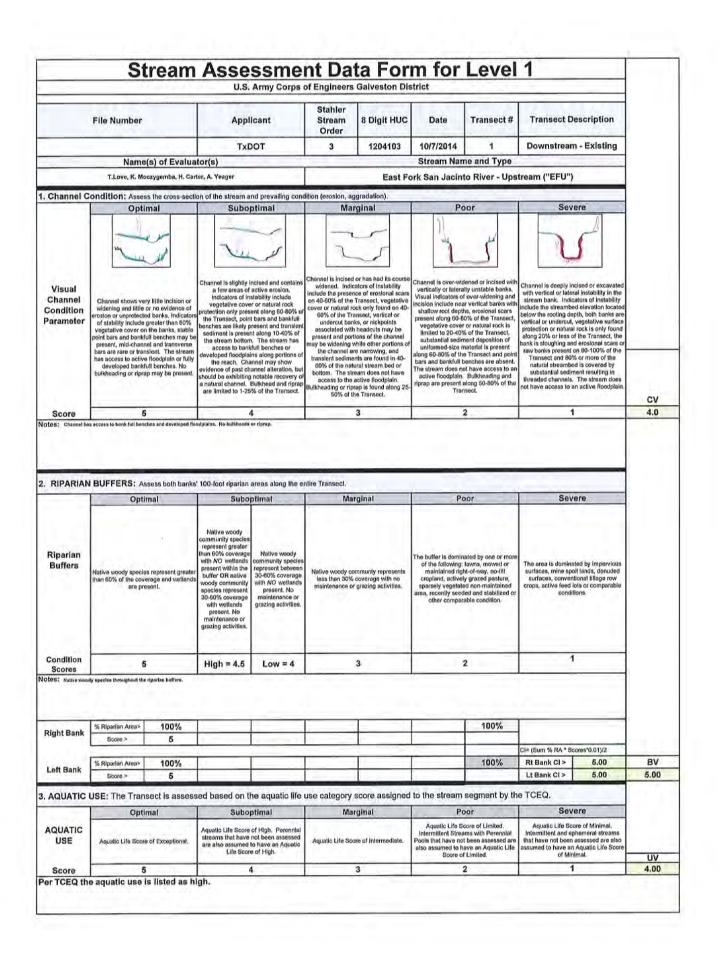


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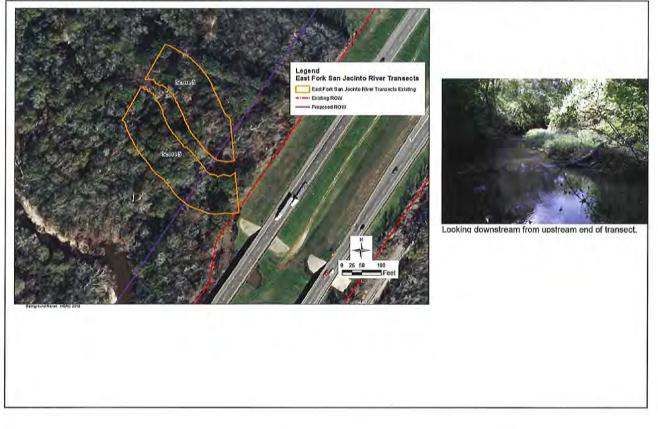
Project #	Applicant	P. C. Statements	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description	
			-		12040103	3/21/2018	3	Upstream - Post-project	
. CHANNEI	ALTERATION: Stream crossin	ngs, riprap, concrete	e, gabions, or cor	crete blocks, straig	htening of chann	el, channelization,	embankments, s	poil piles, constrictions, livestock	
	Optimal	Subop	timal	Marg	inal	Po	or	Severe	
Channel Alteration	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikas, levees, culverks, riprap, bulkheads, armor, drop sinuctures or withdrawal structures within the Transect.	Less than 30% of Impacted by dredg levees, culverts, ri armor, drop structu structures. Evidence may be present, but stability have recove present, have no ob flow	ing, dams, dikes, prap, bulkheads, res or withdrawal of past alteration stream pattern and red. Withdrawals, if servable affect on	Between 30-60% of impacted by dredg levees, culverts, ri armor, drop structu structures. Evidence may be present, but stability are begin Withdrawals, if pres observable affect of	ing, dams, dikes, prap, buikheads, res or withdrawal s of past alteration stream pattern and ning to recover. ent, may have an on flow, but no	Between 60-90% Impacted by dred levees, culverts, r armor, drop struct structures. Evidence is present, and st stability are n Withdrawals, if pre observable affect habitat r	ping, dams, dikes, iprap, bulkheads, ures or withdrawal e of past alteration ream pattern and at recovering. sent, may have an on both flow and	Between 90-100% of the Transect Is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or wilhdrawal structures. Wilhdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or blota.	AV
SCORE	5	4		3		1	1	1	4.00
lotes: No in	pact as a result of the proj								
	REACH	CONDITION I	NDEX and S	TREAM CON	DITION UNI	TS FOR THIS	REACH		
							701 1	E CONDITION INDEX (CI) >>	4.13

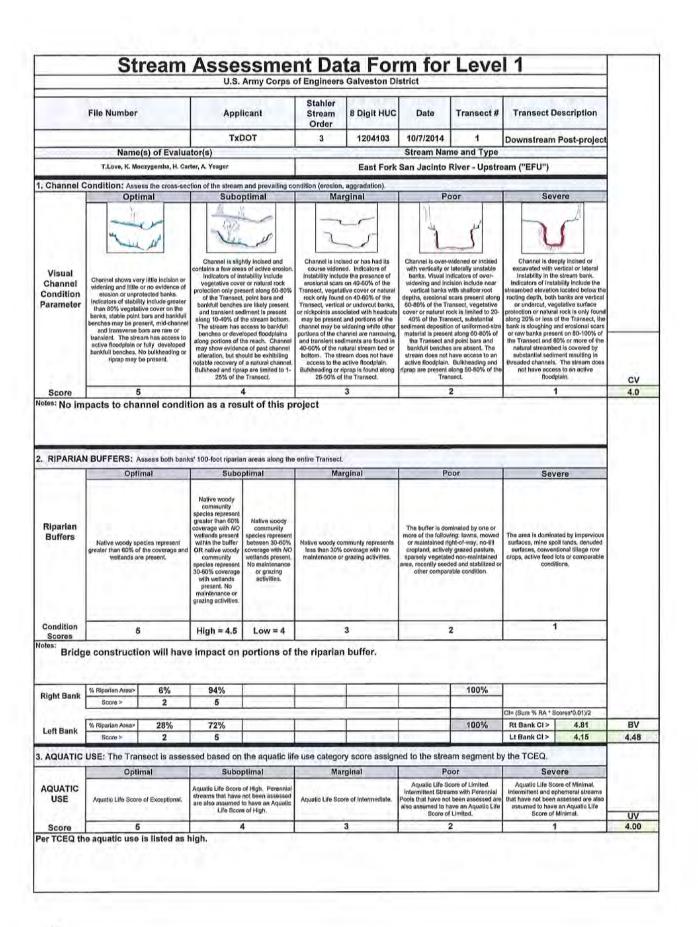




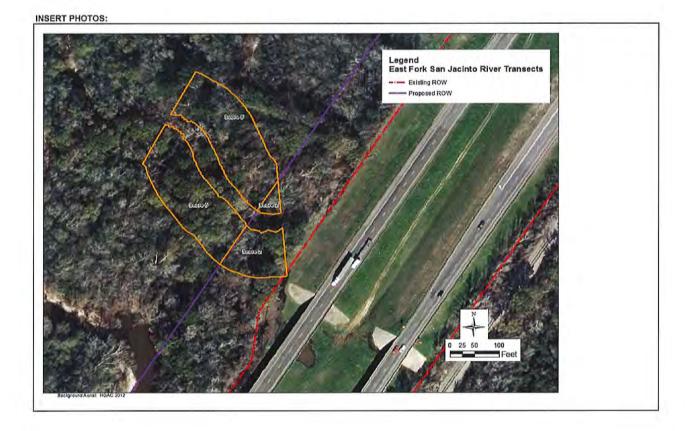
Project #	Applicant		Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description	
	TxDOT		Liberty Co.	R3	1204103	10/7/2014	1	Downstream - Existing	
. CHANNE	LALTERATION: Stream crossin	ngs, riprap, concre	te, gabions, or co	ncrete blocks, straig	ghtening of chann	el, channelization,	embankments, s	poil piles, constrictions, livestock	
	Optimal	Subo	ptimal	Marg	jinal	Po	or	Severe	
Channel Alteration	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverks, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Impacted by dred levees, culverts, armor, drop struc structures. Eviden may be present, bu stability have recov present, have no c	of the Transect Is Iging, dams, dikes, riprap, bulkheads, tures or withdrawal ce of past alteration it stream pattern and ered. Withdrawals, i bbservable affect on pw.	stability are begin	ging, dams, dikes, iprap, bulkheads, ures or withdrawal e of past alteration stream pattern and ming to recover. sent, may have an t on flow, but no	Between 60-90% of the Transect is impacted by dredging, dams, dikes, tevees, cuiverts, finap, buikheads, armor, drop structures or vilibrawal 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 blota.		Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, cuiverts, riprap, buikheads, 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 biote.	AV
SCORE	5		4	3	1	1	2	1	5.00
lotes No chan	netization or man-made alterations.	CONDITION	INDEX and §	STREAM CON		TS FOR THIS	REACH		
			THE LANGER						

INSERT PHOTOS:

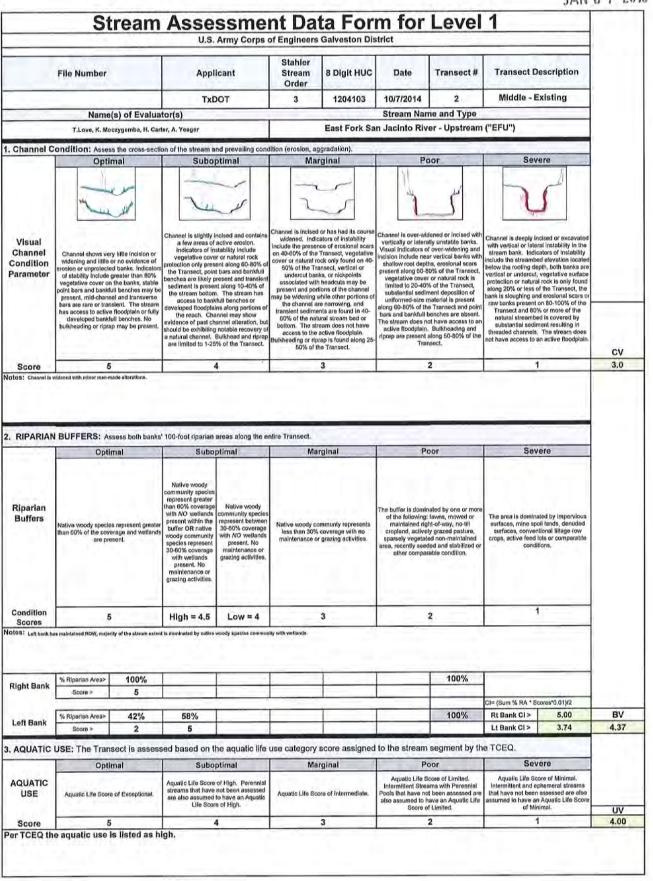




Project #	Applicant		Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description	
	TxDOT		Liberty Co.	R3	1204103	10/7/2014	1	Downstream Post-project	
. CHANNE	LALTERATION: Stream cross	ings, riprap, concr	ete, gabions, or	concrete blocks, st	raightening of ch	annel, channeliza	tion, embankmer	nts, spoil piles, constrictions,	
	Optimal	Subo	otimal	Marg	jinal	Po	or	Severe	
Channel Alteration	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized, No dams, dikes, levees, culverts, riprap, buikheada, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of impacted by dredg levees, culverts, r armor, drop structu structures. Evidence may be present, b and stability ha Withdrawals, if p observable at	jing, dams, dikes, iprap, bulkheads, ures or withdrawal e of past alteration ut stream pattern we recovered, present, have no	may be present, but stream pattern and stability are beginning to recover.		Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culvers, riprap, buikheads, armor, drop structures or withdrawal structures. Evidence of past alternation is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biola.		Between 90-100% of the Transect Is impacted by diredging, dams, dires, levees, culverts, riprap, buikheads, armor, drop suructures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.	AV
SCORE	5	4	1	3	1	:	2	1	4.00
Notes Pilir	ngs associated with the	US 59 bridg	0						
	REACH C	ONDITION II	IDEX and	STREAM CON	JDITION UN	ITS FOR TH	IS REACH		



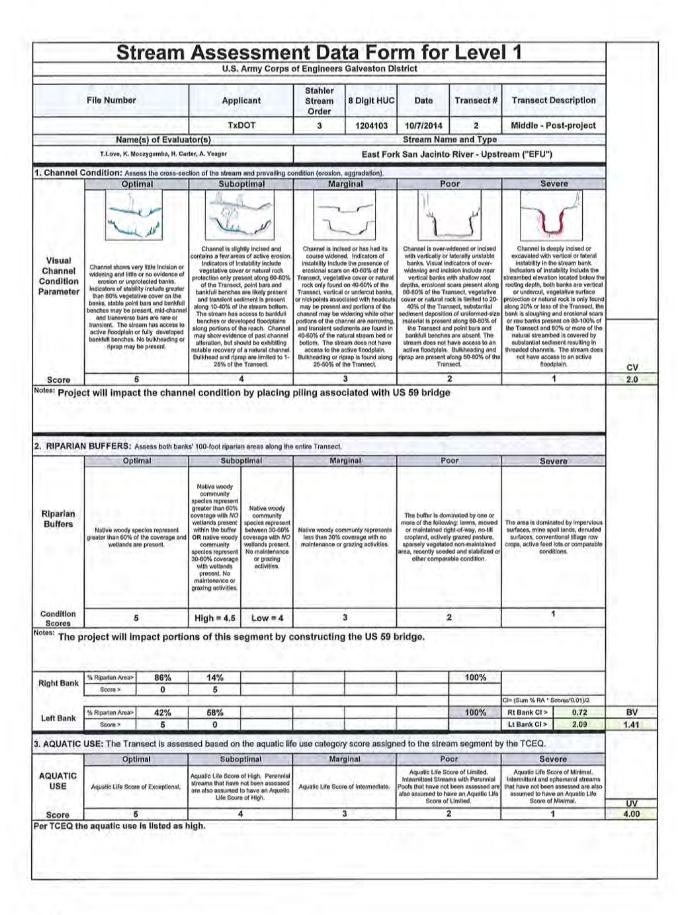




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Channel Alteration	Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverks, liptap, buikheada, armor, drop structures or withdrawal structures within the Transect.	Less than 30% of impacted by dredg levees, culverts, n armor, drop structures. Evidenc may be present, but stability have recove present, have no of flo	ging, dams, dikes, iprap, buikheads, ures or withdrawal e of past alteration stream pattern and ored. Withdrawals, it oservable affect on	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.		Between 80-90% of the Transect is Impacted by dredging, dams, dikes, levees, cuiverts, fiptep, bulkheads, sarmor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Wihdrawals, if present, may have an observable affect on both flow and habitat or blota.		Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or wilhdrawal structures. Wilhdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.	AV
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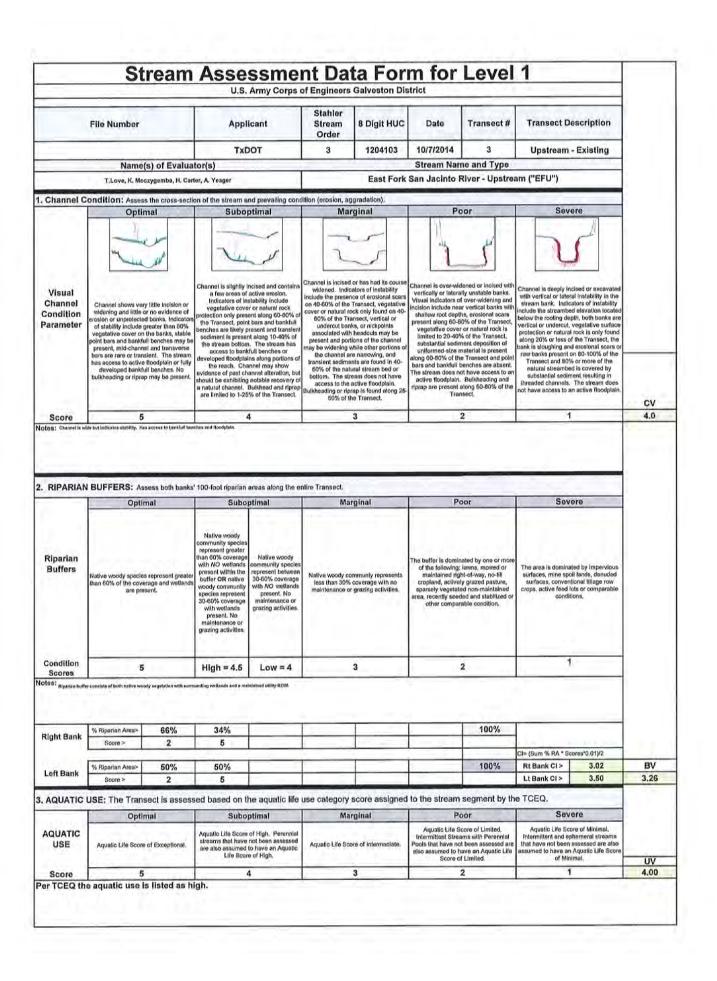
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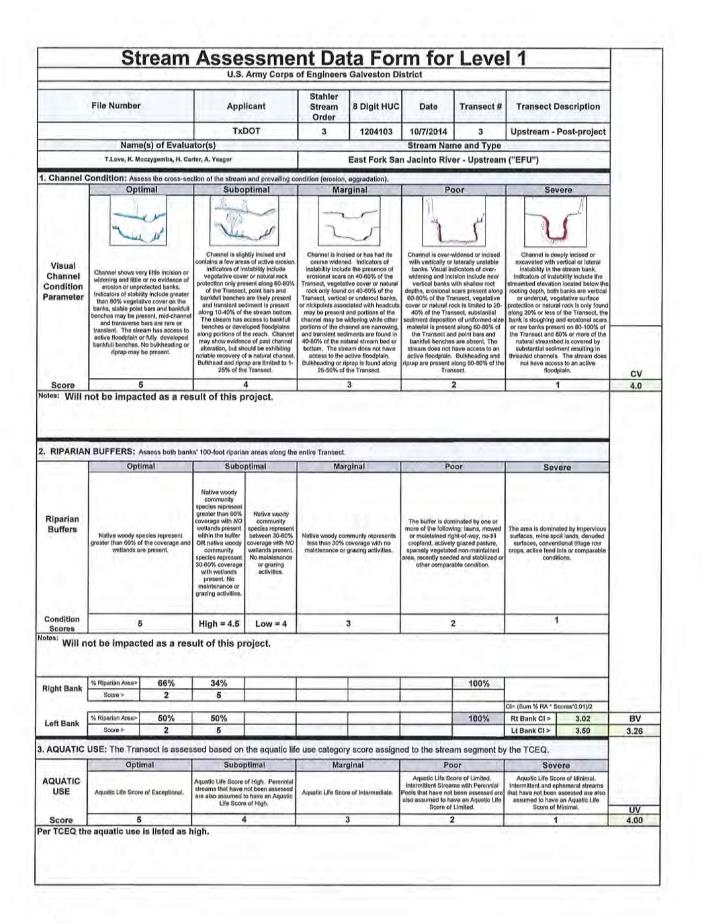
Project #	Applicant		Locality	Cowardin Class.	HUC	Date	Transect#	Transect Description	
	TxDOT		Liberty Co.	R3	1204103	10/7/2014	2	Middle - Post-project	
. CHANNE	LALTERATION: Stream cross	ings, riprap, concr	ete, gabions, or	concrete blocks, st	raightening of ch	annel, channeliza	tion, embankmen	ts, spoil piles, constrictions,	
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Channel Alteration	Channelization, dredging, alteration or hardrening absent. Stream has unaltered pattern or has normalized, No dams, dikes, levese, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect.	Impacted by dredg levees, culverts, r armor, drop struct structures. Evidence may be present, b and stability ha Withdrawals, if p	30% of the fransect is dredging, dams, dikes, erfs, ripap, bulkheads, structures or withdrawal didence of past alteration eneh, but stream patteri is, if present, have no bas fued ro du		of the Transect is ing, dams, dikes, prap, buikheads, res or withdrawal a of past alteration ut stream pattern jinning to recover. sent, may have an ton flow, but no in habitat or blota.	ms, dikes, Jikheads, Vikhadwai amor, drop structures or withdrawai t atileration to recover, y have an boservable affect on both flow and		Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, cuiverts, riprap, buikheads, amor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habital or biota.	AV
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Project #	Applicant	The second s	Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description	
	TxDOT		Liberty Co.	R3	1204103	10/7/2014	3	Upstream - Existing	
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Channel Alteration	Channelization, dredging, alteration or hardening absent. Stream has unaitered pattern or has normalized. No dams, dikes, levées, culvedris, tigrap, bulkheada, armor, drop structures or withdrawal structures within the Transect.	Impacted by dred levees, culverts, armor, drop struc structures. Eviden may be present, bu stability have recov present, have no c		structures. Evidence of past alteration and may be present, but stream pattern and stability are beginning to recover.		Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, cuivers, ritrap, bulkheads, 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 blota.		Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, cuiverts, riprap, buikheads, armor, drop situctures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota.	AV
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Project #	Applicant		Locality	Cowardin Class.	HUC	Date	Transect #	Transect Description	-
	TxDOT		Liberty Co.	R3	1204103	10/7/2014	3	Upstream - Post-project	
. CHANNE	LALTERATION: Stream cross	ings, riprap, conc	rete, gabions, or	concrete blocks, st	raightening of ch	annel, channeliza	tion, embankmer		
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This report was written on behalf of the Texas Department of Transportation by



20465 State Highway 249, Suite 300 Houston, TX 77070 www.spiritenvironmental.com

Attachment 11

Section 401 Water Quality Certification

Information



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.

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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.

4

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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Attachment A – Alternatives Analysis

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Alternatives Analysis

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.

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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		Resources in ect Area		d Impacts to Resources	Aquatic Resources Avoided		
o contro de c	Acres	Linear feet	Acres	Linear feet	Acres	Linear feet	
		Potentially Ju	risdictional	Features			
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	
Total	8.705	3,219	7.334	513	1.371	729	
		Potentially Non-	Jurisdiction	al Features			
PEM Wetlands	0.128	-	0.078	4	0.050	-	
Drainage Ditches	2.836	7,123	1.783	5,586	1.053	1,537	
Total	2.964	7,123	1.861	5,586	1.103	1,537	

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.

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



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