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August 11, 2016

Attn: Mr. Brian J. Bader
Department of the Army
Galveston District, Corps of Engineers
Regulatory Division
Evaluation Branch – North Evaluation Unit
2000 Fort Point Road
Galveston, Texas 77550

**RE: Summary of Stream Assessments**
**Permit Application SWG-2015-00145**
**Corrigan OSB, L.L.C.**
**CK Associates' Project No. 12356**

Dear Mr. Bader:

CK Associates (CK), on behalf of our client Corrigan OSB, L.L.C., conducted stream assessments in areas impacted by the proposed oriented strand board (OSB) facility and entrance road in Corrigan, Texas (Figure 1). This letter supersedes the correspondence of May 24, 2015 and is necessary because:

1) After review by Compliance, impacts to jurisdictional waters are associated with the construction of the plant access road and road crossing at Bear Creek (Figure 2). Other aquatic resources impacted within the project area were determined to be non-jurisdictional.
2) Impacts at the Bear Creek crossing have been reduced, the applicant has modified post construction plans to include replanting of native woody species along a portion of the area cleared during construction (Figure 3).
3) Assessment of an ephemeral tributary to Bear Creek that was rerouted and filled during road construction has been added (Figure 3).

**METHODOLGY**

On August, 26, 2014 and February 12, 2016, CK conducted site visits for delineation and assessment of the functional condition of ephemeral and intermittent streams in the vicinity of the Bear Creek crossing. A site visit with representatives of Compliance was conducted on June 10, 2016.

Prior to conducting the functional assessments, CK reviewed available data from the US Geological Survey (USGS) National Hydrography Data (NHD) Set, historic aerial photography, topographic maps, soil survey data, rainfall data, and stream gage records. The project area is located in headwaters of the Middle Neches Watershed (HUC – 1202002-0406) and has been actively managed for silviculture for decades. In addition to land disturbance associated with planting and harvesting trees, there are numerous fire breaks, logging roads, and low water crossings associated with timber operations within the project boundary. Streams in the project area exhibit symptoms (e.g. channel incision, channel

straightening, excess sediment deposition, lack of old growth specimens along smaller channels) of hydrologic alterations and land disturbance generally associated with silviculture, especially before the implementation of best management practices by the industry.

Construction of the entrance road to the OSB facility including a culverted crossing of has impacted two distinct jurisdictional waters: Bear Creek, an intermittent stream; and an unnamed ephemeral tributary to Bear Creek (Figures 2, 3). The impacts to the 430 linear feet of Bear Creek include: clearing/grading within the riparian zone, channel widening, installation of five (5) culverts measuring 10 feet in diameter and 174 feet in length, and installation of rip-rap for erosion control. Impacts to 180 linear feet of an unnamed ephemeral tributary include rerouting to join Bear Creek approximately 50 feet upstream of the former confluence and fill of the portion of the channel that was abandoned (Figure 3).

Ordinary High Water Mark (OHWM) was determined utilizing field indicators outlined in Regulatory Guidance Letter Number 05-05. Leaf litter disturbance, sediment stained leaves and debris, and changes in soil character were used as indicators of OHWM along transects in areas with poorly defined bed and bank. OHWM determinations along several transects were confirmed by USACE during the site visit on June 10, 2016.

Stream condition assessments and the calculation of debits were conducted following the procedures for outlined in the US Army Corps of Engineers – Galveston District Stream Condition Assessment 2013 manual. A total of 4 transects were evaluated. Transects (3) along Bear Creek were evaluated on Feb 12, 2016. The assessment for the unnamed ephemeral tributary was based on both observations and photographs taken August 26, 2014, before the channel was rerouted and filled and on observations made up-gradient of the disturbance on subsequent site visits. It was only possible to access one transect along the ephemeral tributary due to its length.

The distance along the channel between transect endpoints was measured with a hip chain or measuring tape and locations were mapped using a Trimble® GeoXT® Differential Global Positioning System (DGPS) utilizing real-time corrections. Transect endpoints for within each of the areas assessed are shown in Figure 4. Digital photographs were taken of the channel and banks at each transect (Attachment 1).

In addition, a theoretical stream condition assessment was developed for Bear Creek at the crossing and this value was used to calculate the Reach Condition Index Delta and determine the appropriate Impact Factor. Cleared areas in the riparian zone will be replanted with native hardwoods to the maximum extent practical taking into account the requirement to not plant trees that could fall on the power line (Figure 3).

A copy of the stream assessment data forms, the stream assessment summary form including the calculation of debits for the impacted streams is provided in Attachment A. Debits for impacts to Bear Creek were calculated based on the decrease in the Reach Condition Index (RCI) between pre and post construction (after replanting and reseeding) and the appropriate Impact Factor. Debits for impacts as a result of filling the ephemeral channel abandoned due to rerouting include an Impact Factor of 5.

**RESULTS**

The Reach Condition Index (RCI) for the 3 transects evaluated in Bear Creek ranged from 2.9 to 3.25. The RCI for in the short ephemeral drainage that was rerouted and filled was 1.73. The lowest RCI in

the intermittent section of Bear Creek was associated with bed and bank disturbance at the location of an historic low water crossing. It should be noted that the character of the Bear Creek changes along the three transects evaluated due to differences in topography and local geology. Transects 1 and 2 are located in an area with a steeper valley (colluvium) and have predominately limestone/mudstone beds. Stream bed along Transect 3 (alluvium) is predominately sand and gravel.

**CONCLUSIONS**

Based on the impacts to 610 linear feet of stream, the total debits calculated for the impacts associated with the entrance road and culverted crossing is 2288

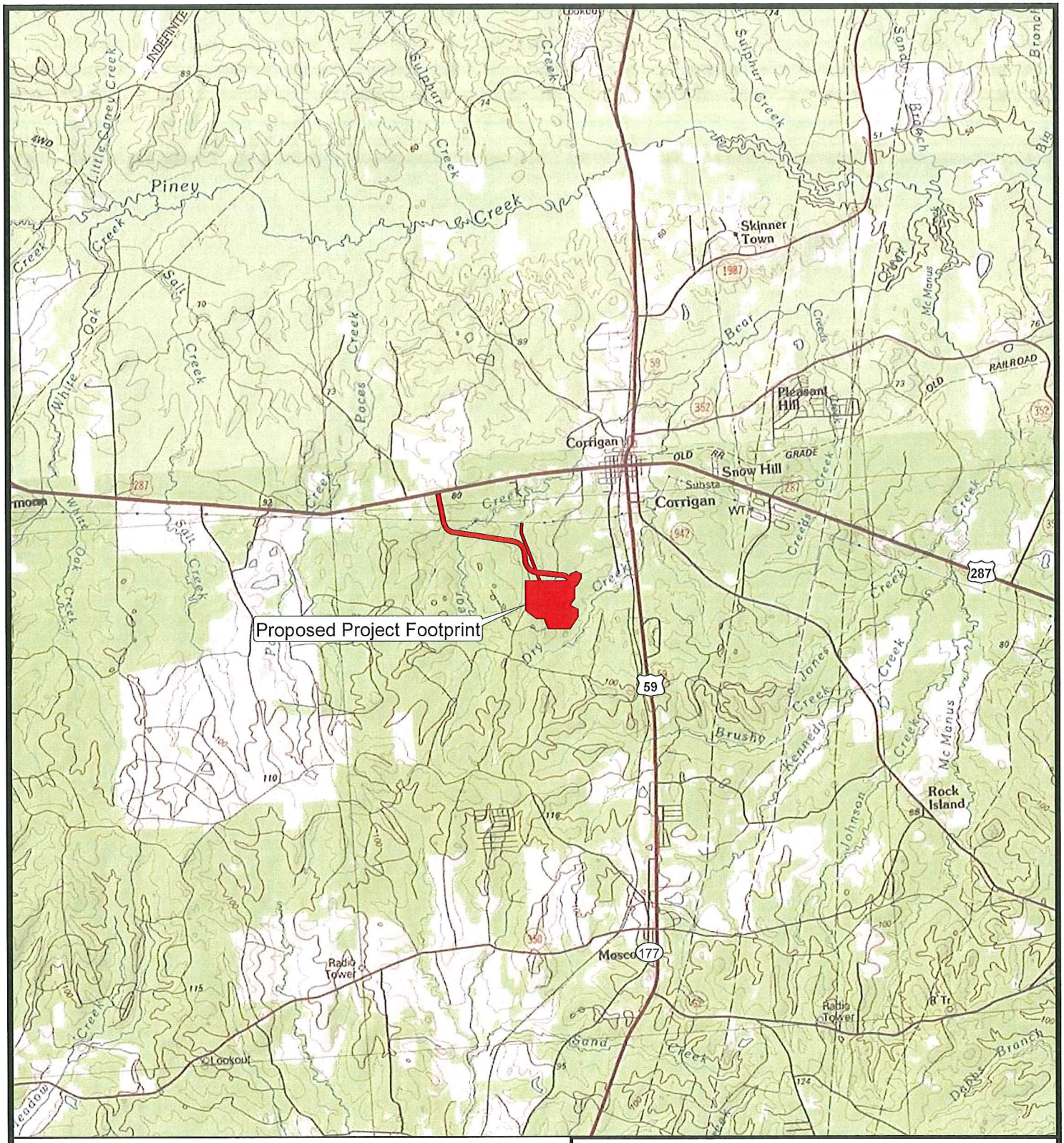
If during your review, you or any members of your staff have any questions, please do not hesitate to contact me by phone at 225-755-1000 or by email at wade.bryant@c-ka.com.

Sincerely,
CK Associates

Wade Bryant
Senior Environmental Scientist

Attachments: **FIGURES 1 – 4**
**LEVEL 1 ASSESSMENT WORKSHEETS & PHOTOGRAPHS**

AUG 19 2016




**Corrigan OSB, L.L.C.**
Corrigan, Texas

Department of the Army Permitting

## Site Location Map

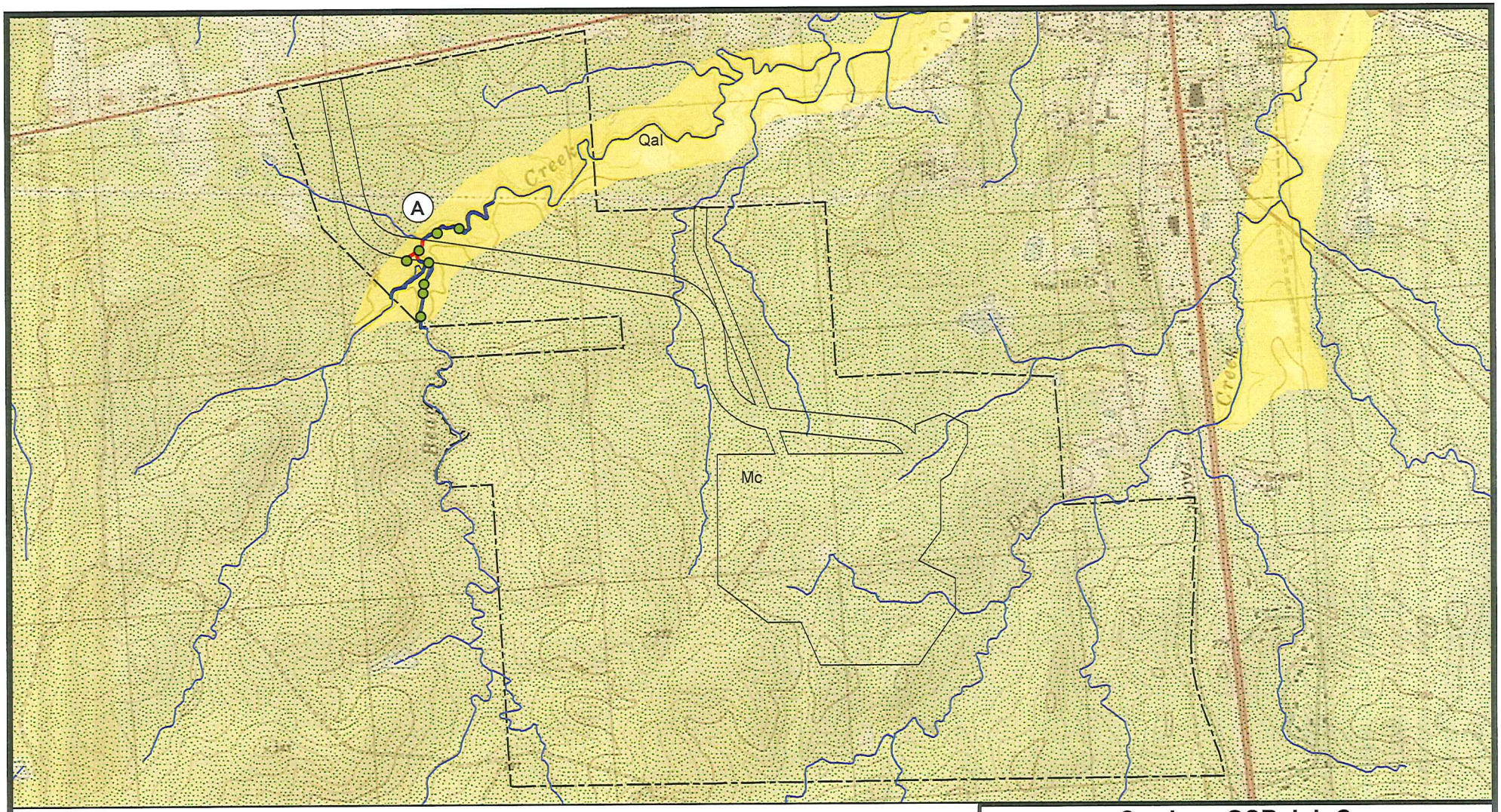
Polk County

CK Associates Environmental Consultants

esri Partner Network Silver

| | |
|---|---|
| Drawn: | CAL/AM10.4 |
| Checked: | WLB |
| Approved: | TEW |
| Date: | 08/15/2016 |
| Dwg. No.: | A12356-59 |

**Figure 1**




**Legend**

- Transect Location
- Impacted
- Non-Impacted
- Proposed Project Footprint
- Property Boundary

**Geologic Formations**

- Qal - Alluvium
- Mc - Colluvium Catahoula

N

S

0 2,000 4,000

Feet

esri Partner Network Silver

REFERENCE

USGS 24K SERIES QUAD MAP, CORRIGAN, TX.

**Corrigan OSB, L.L.C.**

Corrigan, Texas

Department of the Army Permitting

# Bear Creek Transect Location Map

Polk County

CK Associates Environmental Consultants

| | |
|---|---|
| Drawn: | CAL/AM10.4 |
| Checked: | WLB |
| Approved: | TEW |
| Date: | 08/16/2016 |
| Dwg. No.: | A12356-60 |

**Figure 2**

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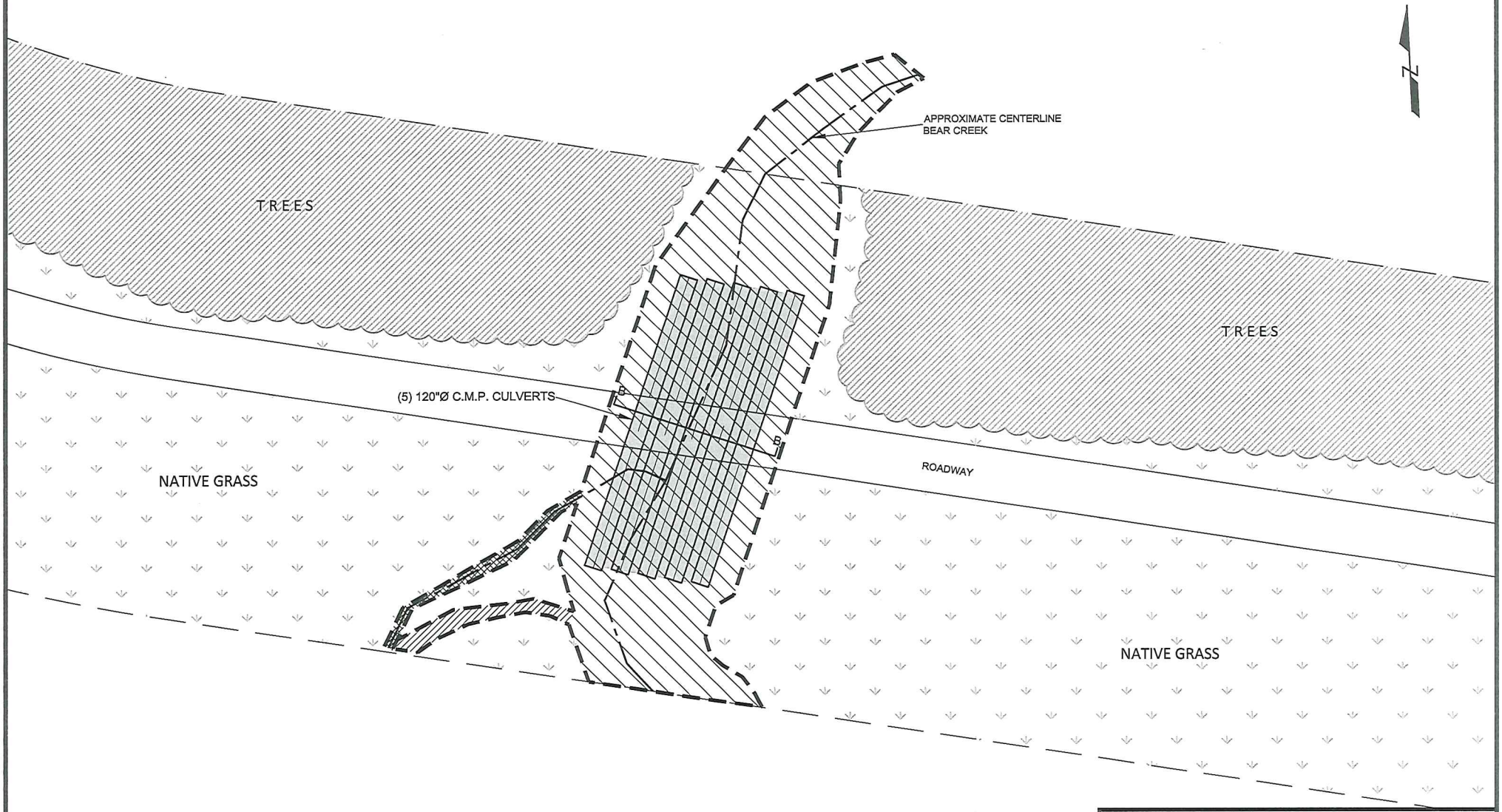



## LEGEND

- APPROXIMATE CENTERLINE PRECONSTRUCTION
- APPROXIMATE LIMITS OF IMPACT
- EPHEMERAL FILLED
- EPHEMERAL REROUTE
- MECHANIZED LAND CLEARING AND FILL DEPOSITION
- LIMITS OF CULVERTS (APPROX. 174')

0' 80' 160'

SCALE: 1" = 80'

Limits of Impact determined from field GPS data prior to construction, recent aerial photos, and construction drawings provided by Johnson & Pace Inc.

**Corrigan OSB, L.L.C.**
Corrigan, Texas

Department of the Army Permitting

# Detail A Plan View

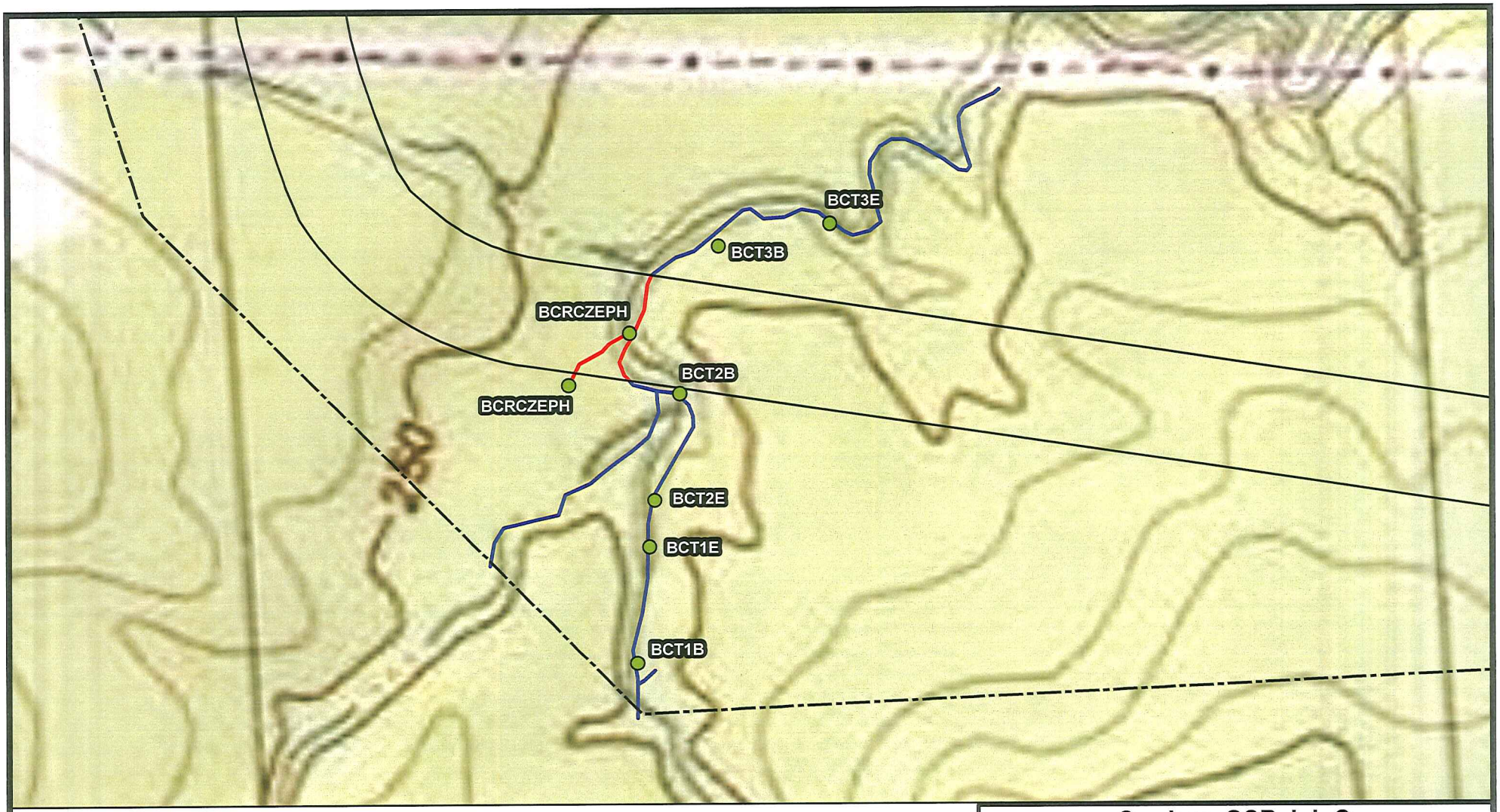
Polk County

CK Associates Environmental Consultants

| | |
|---|---|
| Drawn: | CAL/ACAD |
| Checked: | WLB |
| Approved: | TEW |
| Date: | 08/16/2016 |
| Dwg. No.: | A12356-61 |

**Figure 3**

AUG 19 2016




**Legend**

- Transect Location
- Impacted
- Non-Impacted
- Proposed Project Footprint
- Property Boundary

N

S

0 400 800

Feet

REFERENCE

USGS 24K SERIES QUAD MAP, CORRIGAN, TX.

esri Partner Network Silver

**Corrigan OSB, L.L.C.**

Corrigan, Texas

Department of the Army Permitting

# Bear Creek Transect Detail Map

Polk County

CK Associates Environmental Consultants

| | |
|---|---|
| Drawn: | CAL/AM10.4 |
| Checked: | WLB |
| Approved: | TEW |
| Date: | 08/16/2016 |
| Dwg. No.: | A12356-62 |

**Figure 4**

AUG 19 2016

AUG 19 2016

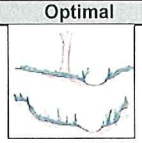
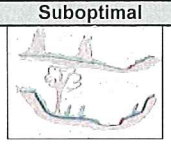
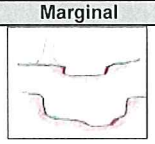
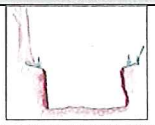
# Stream Assessment Data Form for Level 1

U.S. Army Corps of Engineers Galveston District

| File Number | Applicant | Stahler Stream Order | 8 Digit HUC | Date | Transect # | Transect Description |
|---|---|---|---|---|---|---|
| SWG-2015-00145 | Corrigan OSB, L.L.C. | 2 | 12020002 | 2/12/2016 | BCRC2T1 | Bear Creek |

| Name(s) of Evaluator(s) | Steam Name and Type |
|---|---|
| Wade Bryant / Christina Perez | Bear Creek - Intermittent |

**1. Channel Condition:** Assess the cross-section of the stream and prevailing condition (erosion, aggradation).

| | Optimal | Suboptimal | Marginal | Poor | Severe | |
|---|---|---|---|---|---|---|
| Visual Channel Condition Parameter |  Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present. |  Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect. |  Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect. |  Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniformed-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect. |  Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain. | |
| Score | 5 | 4 | 3 | 2 | 1 | 3.0 |

**Limestone and mudstone stream bottom , mostly run with riffle (outcrop) . Recent alluvium / transient sediment present > 40%. Bankfull benches present, some evidence of bank erosion. Most area of banks 3, some areas 4 (limestone control) and some 2 due to incised channels (sand banks as opposed to rock outcrops) Lowest entrenchment ration BFW = 30 and width at 2x bfw = 35 / = 1.16. Entrichment ratio ranges from 1.16 to 1.7.**

**2. RIPARIAN BUFFERS:** Assess both banks' 100-foot riparian areas along the entire Transect.

| | Optimal | Suboptimal | | Marginal | Poor | Severe |
|---|---|---|---|---|---|---|
| Riparian Buffers | Native woody species represent greater than 60% of the coverage and wetlands are present. | Native woody community species represent greater than 60% coverage with *NO* wetlands present within the buffer **OR** native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities. | Native woody community species represent between 30-60% coverage with *NO* wetlands present. No maintenance or grazing activities. | Native woody community represents less than 30% coverage with no maintenance or grazing activities. | The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition. | The area is dominated by impervious surfaces, mine spoil lands, denuded surfaces, conventional tillage row crops, active feed lots or comparable conditions. |
| Condition Scores | 5 | High = 4.5 | Low = 4 | 3 | 2 | 1 |

**Native woody > 60% No wetlands. SMZ intact oaks / cedar present. Evidence of historic logging adjacent to creek (stumps)**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Right Bank | % Riparian Area> | 0% | 0% | 100% | 0% | 0% | 0% | 100% | | | |
| | Score > | 5 | 4.5 | 4 | 3 | 2 | 1 | | | | |
| | | | | | | | | | CI= (Sum % RA * Scores*0.01)/2 | | |
| Left Bank | % Riparian Area> | 0% | 0% | 100% | 0% | 0% | 0% | 100% | Rt Bank CI > | 4.00 | BV |
| | Score > | 5 | 4.5 | 4 | 3 | 2 | 1 | | Lt Bank CI > | 4.00 | 4.00 |

**3. AQUATIC USE:** The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.

| | Optimal | Suboptimal | Marginal | Poor | Severe | |
|---|---|---|---|---|---|---|
| AQUATIC USE | Aquatic Life Score of Exceptional. | Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High. | Aquatic Life Score of Intermediate. | Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited. | Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal. | UV |
| Score | 5 | 4 | 3 | 2 | 1 | 2.00 |

Notes: intermittent

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# Stream Impact Assessment Form Page 2

| Project # | Applicant | Locality | Cowardin Class. | HUC | Date | Transect # | Transect Description |
|---|---|---|---|---|---|---|---|
| | Corrigan OSB, L.L.C. | | | 12020002 | 2/12/2016 | BCRC2T1 | Intermittent |

**4. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock

| | Optimal | Suboptimal | Marginal | Poor | Severe | |
|---|---|---|---|---|---|---|
| Channel Alteration | Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect. | Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow. | Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota. | Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota. | Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota. | AV |
| SCORE | 5 | 4 | 3 | 2 | 1 | 4.00 |

Notes: T1 is upstream of historic low water crossing (located in T2), evidence of snagging / channelization in past

| REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH | |
|---|---|
| THE CONDITION INDEX (CI) >> | 3.25 |

INSERT PHOTOS:

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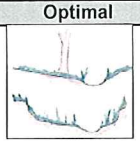
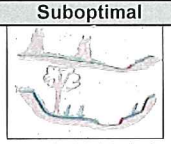
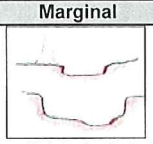
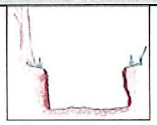
# Stream Assessment Data Form for Level 1

U.S. Army Corps of Engineers Galveston District

| File Number | Applicant | Stahler Stream Order | 8 Digit HUC | Date | Transect # | Transect Description |
|---|---|---|---|---|---|---|
| SWG-2015-00145 | Corrigan OSB, L.L.C. | 2 | 12020002 | 2/12/2016 | BCRC2T2 | Bear Creek |

| Name(s) of Evaluator(s) | Steam Name and Type |
|---|---|
| Wade Bryant / Christina Perez | Bear Creek - Intermittent |

**1. Channel Condition:** Assess the cross-section of the stream and prevailing condition (erosion, aggradation).

| | Optimal | Suboptimal | Marginal | Poor | Severe | |
|---|---|---|---|---|---|---|
| Visual Channel Condition Parameter |  Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present. |  Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect. |  Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect. |  Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniformed-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect. |  Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain. | |
| Score | 5 | 4 | 3 | 2 | 1 | 2.8 |

**Limestone bed rock and sand , mostly run. Recent alluvium / transient sediment present > 40% Bankfull benches present, some evidence of bank erosion. 32 feet at BFH and 45 at @2X BFH /Entrichment ratio = 1.4 Vegetation and channel form suggest this section may have been channelized / snagged in the pass to keep the low water crossing clear. Note this assessment was refined after field visit with compliance and additional measurments of entrinchment. Entrichment ratios range 1.2 - 1.6**

**2. RIPARIAN BUFFERS:** Assess both banks' 100-foot riparian areas along the entire Transect.

| | Optimal | Suboptimal | | Marginal | Poor | Severe |
|---|---|---|---|---|---|---|
| Riparian Buffers | Native woody species represent greater than 60% of the coverage and wetlands are present. | Native woody community species represent greater than 60% coverage with *NO* wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities. | Native woody community species represent between 30-60% coverage with *NO* wetlands present. No maintenance or grazing activities. | Native woody community represents less than 30% coverage with no maintenance or grazing activities. | The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition. | The area is dominated by impervious surfaces, mine spoil lands, denuded surfaces, conventional tillage row crops, active feed lots or comparable conditions. |
| Condition Scores | 5 | High = 4.5 | Low = 4 | 3 | 2 | 1 |

**Native woody @ 60% up to 80 ft, No wetlands , 80-100 ft pine silviculture mixed with native hardwoods**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Right Bank | % Riparian Area> | 0% | 0% | 80% | 20% | 0% | 0% | 100% | | |
| | Score > | 5 | 4.5 | 4 | 3 | 2 | 1 | | | |
| | | | | | | | | | CI= (Sum % RA * Scores*0.01)/2 | |
| Left Bank | % Riparian Area> | 0% | 0% | 80% | 20% | 0% | 0% | 100% | Rt Bank CI > | 3.80 |
| | Score > | 5 | 4.5 | 4 | 3 | 2 | 1 | | Lt Bank CI > | 3.80 |

| | BV |
|---|---|
| | 3.80 |

**3. AQUATIC USE:** The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.

| | Optimal | Suboptimal | Marginal | Poor | Severe | |
|---|---|---|---|---|---|---|
| AQUATIC USE | Aquatic Life Score of Exceptional. | Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High. | Aquatic Life Score of Intermediate. | Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited. | Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal. | UV |
| Score | 5 | 4 | 3 | 2 | 1 | 2.00 |

BC

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# Stream Impact Assessment Form Page 2

| Project # | Applicant | Locality | Cowardin Class. | HUC | Date | Transect # | Transect Description |
|---|---|---|---|---|---|---|---|
| | Corrigan OSB, L.L.C. | | | 12020002 | 2/12/2016 | BCRC2T2 | Intermittent |

**4. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock

| | Optimal | Suboptimal | Marginal | Poor | Severe | |
|---|---|---|---|---|---|---|
| Channel Alteration | Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect. | Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow. | Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota. | Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota. | Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota. | AV |
| SCORE | 5 | 4 | 3 | 2 | 1 | 3.00 |

Notes: historic low water crossing appears to have been channelized in past (no meanders). Now site of culverts. This culverted area is located what appears to be the last limestone/mudstone outcrop before tranisition to sandy banks and bottom. Note transition in valley and stream grade on topo at BCT2 compared to BCT1 (upgradient) and BCT3 (downgradient)

| REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH | |
|---|---|
| THE CONDITION INDEX (CI) >> | 2.90 |

INSERT PHOTOS:

AUG 19 2016

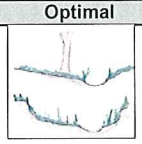
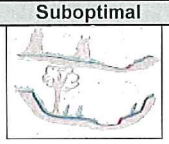
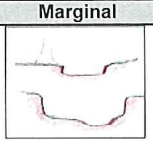
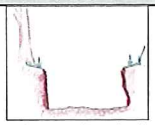
# Stream Assessment Data Form for Level 1

U.S. Army Corps of Engineers Galveston District

| File Number | Applicant | Stahler Stream Order | 8 Digit HUC | Date | Transect # | Transect Description |
|---|---|---|---|---|---|---|
| SWG-2015-00145 | Corrigan OSB, L.L.C. | 2 | 12020002 | 2/12/2016 | BCRC2T3 | Bear Creek |

| Name(s) of Evaluator(s) | Steam Name and Type |
|---|---|
| Wade Bryant / Christina Perez | Bear Creek - Intermittent |

**1. Channel Condition:** Assess the cross-section of the stream and prevailing condition (erosion, aggradation).

| | Optimal | Suboptimal | Marginal | Poor | Severe | |
|---|---|---|---|---|---|---|
| Visual Channel Condition Parameter |  Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present. |  Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect. |  Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect. |  Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniformed-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect. |  Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain. | |
| Score | 5 | 4 | 3 | 2 | 1 | 2.5 |

**Sand banks and bottom with extensive erosional features (incised and widened). 60 + % transient sediment, Valley, slope, and bank substrate different than BCT1 , BCT2 : BFW 83 and width at 2x bfh = 114 , entrenchment ratio 1.37 Note see Geology map Texas - shows alluvium / colluvium boundary at location between T2-3 http://txpub.usgs.gov/DSS/texasgeology/?tooltipsShow=true&splashShow=true&overviewMapShow=false&basemap=esri_topo&basemapOpacity=1&showDataLayers=RockUnitPoly250K&dataLayerOpacity=0.7&myLocationShow=true&myLocationZoomIn=0.75&extent=level:-94.84009,30.96980,6**

**2. RIPARIAN BUFFERS:** Assess both banks' 100-foot riparian areas along the entire Transect.

| | Optimal | Suboptimal | | Marginal | Poor | Severe |
|---|---|---|---|---|---|---|
| Riparian Buffers | Native woody species represent greater than 60% of the coverage and wetlands are present. | Native woody community species represent greater than 60% coverage with *NO* wetlands present within the buffer OR native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities. | Native woody community species represent between 30-60% coverage with *NO* wetlands present. No maintenance or grazing activities. | Native woody community represents less than 30% coverage with no maintenance or grazing activities. | The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition. | The area is dominated by impervious surfaces, mine spoil lands, denuded surfaces, conventional tillage row crops, active feed lots or comparable conditions. |
| Condition Scores | 5 | High = 4.5 | Low = 4 | 3 | 2 | 1 |

**left bank pine silviculture 80 - 100 feet from bank, Native hardwoodsmixed withsilviculture pines 0-80 feet from bank. Right bank mixed hardwoods and pine.**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Right Bank | % Riparian Area> | 0% | 0% | 60% | 0% | 40% | 0% | 100% | | | |
| | Score > | 5 | 4.5 | 4 | 3 | 2 | 1 | | | | |
| | | | | | | | | | CI= (Sum % RA * Scores*0.01)/2 | | |
| Left Bank | % Riparian Area> | 0% | 0% | 80% | 0% | 20% | 20% | 120% | Rt Bank CI > | 3.20 | BV |
| | Score > | 5 | 4.5 | 4 | 3 | 2 | 1 | | Lt Bank CI > | 3.80 | 3.50 |

**3. AQUATIC USE:** The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.

| | Optimal | Suboptimal | Marginal | Poor | Severe | |
|---|---|---|---|---|---|---|
| AQUATIC USE | Aquatic Life Score of Exceptional. | Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High. | Aquatic Life Score of Intermediate. | Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited. | Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal. | UV |
| Score | 5 | 4 | 3 | 2 | 1 | 2.00 |

Notes:intermittent

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# Stream Impact Assessment Form Page 2

| Project # | Applicant | Locality | Cowardin Class. | HUC | Date | Transect # | Transect Description |
|---|---|---|---|---|---|---|---|
| | Corrigan OSB, L.L.C. | | | 12020002 | 2/12/2016 | BCRC2T3 | Intermittent |

**4. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock

| | Optimal | Suboptimal | Marginal | Poor | Severe | |
|---|---|---|---|---|---|---|
| Channel Alteration | Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect. | Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow. | Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota. | Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota. | Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota. | AV |
| SCORE | 5 | 4 | 3 | 2 | 1 | 4.00 |

Notes: Evidence of historic snagging and or straightening of the channel in the upper 1/3 of the transect

| REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH | |
|---|---|
| THE CONDITION INDEX (CI) >> | 3.00 |

INSERT PHOTOS:

AUG 19 2016

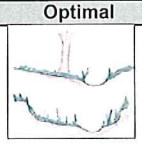
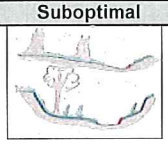
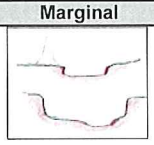
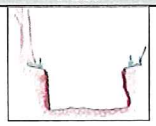
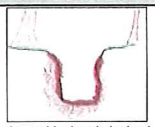
# Stream Assessment Data Form for Level 1

U.S. Army Corps of Engineers Galveston District

| File Number | Applicant | Stahler Stream Order | 8 Digit HUC | Date | Transect # | Transect Description |
|---|---|---|---|---|---|---|
| SWG-2015-00145 | Corrigan OSB, L.L.C. | 2 | 12020002 | 8/2/2016 | BCRC2 Impact | Bear Creek - Impact |

| Name(s) of Evaluator(s) | Steam Name and Type |
|---|---|
| Wade Bryant / Christina Perez | Bear Creek - Intermittent IMPACT |

**1. Channel Condition:** Assess the cross-section of the stream and prevailing condition (erosion, aggradation).

| | Optimal | Suboptimal | Marginal | Poor | Severe | |
|---|---|---|---|---|---|---|
| Visual Channel Condition Parameter |  Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present. |  Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect. |  Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect. |  Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniformed-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect. |  Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain. | |
| Score | 5 | 4 | 3 | 2 | 1 | 2.0 |

Culverts on Bed Rock, Fill, right of way , channel laid back along portiions that intersect the ROW drainage 250 / 430 feet with culverts or rip rap = 58% (2) , 152 (38 %) feet no widening, minimal disturbance inside OHWM, but riparian cleared for right of way, portions will be replanted with trees (see riparian below)

**2. RIPARIAN BUFFERS:** Assess both banks' 100-foot riparian areas along the entire Transect.

| | Optimal | Suboptimal | | Marginal | Poor | Severe |
|---|---|---|---|---|---|---|
| Riparian Buffers | Native woody species represent greater than 60% of the coverage and wetlands are present. | Native woody community species represent greater than 60% coverage with *NO* wetlands present within the buffer **OR** native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities. | Native woody community species represent between 30-60% coverage with *NO* wetlands present. No maintenance or grazing activities. | Native woody community represents less than 30% coverage with no maintenance or grazing activities. | The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition. | The area is dominated by impervious surfaces, mine spoil lands, denuded surfaces, conventional tillage row crops, active feed lots or comparable conditions. |
| Condition Scores | 5 | High = 4.5 | Low = 4 | 3 | 2 | 1 |

Roadway = 1 / maintained right-of-way = 2, Replant native hardwoods= 4.5 South of road the ROW will be maintained to keep power line clear.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| g North of roa | % Riparian Area> | 0% | 40% | 0% | 0% | 40% | 20% | 100% | | | |
| | Score > | 5 | 4.5 | 4 | 3 | 2 | 1 | | | | |
| | | | | | | | | | CI= (Sum % RA * Scores*0.01)/2 | | |
| Left Bank | % Riparian Area> | 0% | 40% | 0% | 0% | 40% | 20% | 100% | Rt Bank CI > | 2.80 | BV |
| | Score > | 5 | 4.5 | 4 | 3 | 2 | 1 | | Lt Bank CI > | 2.80 | 2.80 |

**3. AQUATIC USE:** The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.

| | Optimal | Suboptimal | Marginal | Poor | Severe | |
|---|---|---|---|---|---|---|
| AQUATIC USE | Aquatic Life Score of Exceptional. | Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High. | Aquatic Life Score of Intermediate. | Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited. | Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal. | UV |
| Score | 5 | 4 | 3 | 2 | 1 | 2.00 |

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# Stream Impact Assessment Form Page 2

| Project # | Applicant | Locality | Cowardin Class. | HUC | Date | Transect # | Transect Description |
|---|---|---|---|---|---|---|---|
| | Corrigan OSB, L.L.C. | | | 12020002 | 8/2/2016 | BCRC3IMPACT | Intermittent |

**4. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock

| | Optimal | Suboptimal | Marginal | Poor | Severe | |
|---|---|---|---|---|---|---|
| Channel Alteration | Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect. | Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow. | Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota. | Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota. | Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota. | AV |
| SCORE | 5 | 4 | 3 | 2 | 1 | 2.00 |

250 /430 feet with culverts or rip rap = 58%

| REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH | |
|---|---|
| THE CONDITION INDEX (CI) >> | 2.20 |

INSERT PHOTOS:

AUG 19 2016

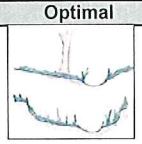
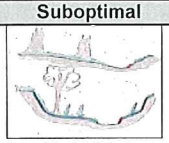
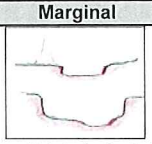
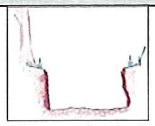
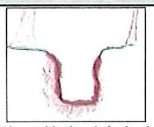
# Stream Assessment Data Form for Level 1

U.S. Army Corps of Engineers Galveston District

| File Number | Applicant | Stahler Stream Order | 8 Digit HUC | Date | Transect # | Transect Description |
|---|---|---|---|---|---|---|
| SWG-2015-00145 | Corrigan OSB, L.L.C. | 0 | 12020002 | 8/26/2014 | BCRCEPH | Ephemeral -LB |

| Name(s) of Evaluator(s) | Steam Name and Type |
|---|---|
| Wade Bryant / Christina Perez | Ephemeral drainage into Bear Creek at Crossing |

**1. Channel Condition:** Assess the cross-section of the stream and prevailing condition (erosion, aggradation).

| | Optimal | Suboptimal | Marginal | Poor | Severe | |
|---|---|---|---|---|---|---|
| Visual Channel Condition Parameter |  Channel shows very little incision or widening and little or no evidence of erosion or unprotected banks. Indicators of stability include greater than 80% vegetative cover on the banks, stable point bars and bankfull benches may be present, mid-channel and transverse bars are rare or transient. The stream has access to active floodplain or fully developed bankfull benches. No bulkheading or riprap may be present. |  Channel is slightly incised and contains a few areas of active erosion. Indicators of instability include vegetative cover or natural rock protection only present along 60-80% of the Transect, point bars and bankfull benches are likely present and transient sediment is present along 10-40% of the stream bottom. The stream has access to bankfull benches or developed floodplains along portions of the reach. Channel may show evidence of past channel alteration, but should be exhibiting notable recovery of a natural channel. Bulkhead and riprap are limited to 1-25% of the Transect. |  Channel is incised or has had its course widened. Indicators of instability include the presence of erosional scars on 40-60% of the Transect, vegetative cover or natural rock only found on 40-60% of the Transect, vertical or undercut banks, or nickpoints associated with headcuts may be present and portions of the channel may be widening while other portions of the channel are narrowing, and transient sediments are found in 40-60% of the natural stream bed or bottom. The stream does not have access to the active floodplain. Bulkheading or riprap is found along 25-50% of the Transect. |  Channel is over-widened or incised with vertically or laterally unstable banks. Visual indicators of over-widening and incision include near vertical banks with shallow root depths, erosional scars present along 60-80% of the Transect, vegetative cover or natural rock is limited to 20-40% of the Transect, substantial sediment deposition of uniformed-size material is present along 60-80% of the Transect and point bars and bankfull benches are absent. The stream does not have access to an active floodplain. Bulkheading and riprap are present along 50-80% of the Transect. |  Channel is deeply incised or excavated with vertical or lateral instability in the stream bank. Indicators of instability include the streambed elevation located below the rooting depth, both banks are vertical or undercut, vegetative surface protection or natural rock is only found along 20% or less of the Transect, the bank is sloughing and erosional scars or raw banks present on 80-100% of the Transect and 80% or more of the natural streambed is covered by substantial sediment resulting in threaded channels. The stream does not have access to an active floodplain. | |
| Score | 5 | 4 | 3 | 2 | 1 | 1.5 |

Incised and substantial sediment deposition. No floodplain. Evidence of historic straightening including vegetated spoil. Lack of old growth along channel suggests SMZ was

**2. RIPARIAN BUFFERS:** Assess both banks' 100-foot riparian areas along the entire Transect.

| | Optimal | Suboptimal | | Marginal | Poor | Severe |
|---|---|---|---|---|---|---|
| Riparian Buffers | Native woody species represent greater than 60% of the coverage and wetlands are present. | Native woody community species represent greater than 60% coverage with *NO* wetlands present within the buffer **OR** native woody community species represent 30-60% coverage with wetlands present. No maintenance or grazing activities. | Native woody community species represent between 30-60% coverage with *NO* wetlands present. No maintenance or grazing activities. | Native woody community represents less than 30% coverage with no maintenance or grazing activities. | The buffer is dominated by one or more of the following: lawns, mowed or maintained right-of-way, no-till cropland, actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized or other comparable condition. | The area is dominated by impervious surfaces, mine spoil lands, denuded surfaces, conventional tillage row crops, active feed lots or comparable conditions. |
| Condition Scores | 5 | High = 4.5 | Low = 4 | 3 | 2 | 1 |

Riparian zone resurveyed after clear cutting. Clear Cut - timber harvest narrow smz

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Right Bank | % Riparian Area> | 0% | 0% | 0% | 20% | 0% | 80% | 100% | | | |
| | Score > | 5 | 4.5 | 4 | 3 | 2 | 1 | | | | |
| | | | | | | | | | CI= (Sum % RA * Scores*0.01)/2 | | |
| Left Bank | % Riparian Area> | 0% | 0% | 0% | 20% | 0% | 80% | 100% | Rt Bank CI > | 1.40 | BV |
| | Score > | 5 | 4.5 | 4 | 3 | 2 | 1 | | Lt Bank CI > | 1.40 | 1.40 |

**3. AQUATIC USE:** The Transect is assessed based on the aquatic life use category score assigned to the stream segment by the TCEQ.

| | Optimal | Suboptimal | Marginal | Poor | Severe | |
|---|---|---|---|---|---|---|
| AQUATIC USE | Aquatic Life Score of Exceptional. | Aquatic Life Score of High. Perennial streams that have not been assessed are also assumed to have an Aquatic Life Score of High. | Aquatic Life Score of Intermediate. | Aquatic Life Score of Limited. Intermittent Streams with Perennial Pools that have not been assessed are also assumed to have an Aquatic Life Score of Limited. | Aquatic Life Score of Minimal. Intermittent and ephemeral streams that have not been assessed are also assumed to have an Aquatic Life Score of Minimal. | UV |
| Score | 5 | 4 | 3 | 2 | 1 | 1.00 |

Ephemeral - only carries water during storm events, no aquatic inverts observed, no crayfish

# Stream Impact Assessment Form Page 2

| Project # | Applicant | Locality | Cowardin Class. | HUC | Date | Transect # | Transect Description |
|---|---|---|---|---|---|---|---|
| | Corrigan OSB, L.L.C. | | | 12020002 | 8/26/2014 | BCRCEPH | Ephemeral -LB |

**4. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock

| | Optimal | Suboptimal | Marginal | Poor | Severe | |
|---|---|---|---|---|---|---|
| Channel Alteration | Channelization, dredging, alteration or hardening absent. Stream has unaltered pattern or has normalized. No dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures within the Transect. | Less than 30% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability have recovered. Withdrawals, if present, have no observable affect on flow. | Between 30-60% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration may be present, but stream pattern and stability are beginning to recover. Withdrawals, if present, may have an observable affect on flow, but no observable affect on habitat or biota. | Between 60-90% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Evidence of past alteration is present, and stream pattern and stability are not recovering. Withdrawals, if present, may have an observable affect on both flow and habitat or biota. | Between 90-100% of the Transect is impacted by dredging, dams, dikes, levees, culverts, riprap, bulkheads, armor, drop structures or withdrawal structures. Withdrawals, if present, are large enough to have severe loss of flow and cause little to no habitat or biota. | AV |
| SCORE | 5 | 4 | 3 | 2 | 1 | 3.00 |

Evidence of historic channelization likley associated with logging.

| REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH | |
|---|---|
| THE CONDITION INDEX (CI) >> | 1.73 |

INSERT PHOTOS:

# Stream Assessment Summary Form (Form 2)

## Galveston District Stream Condition Assessment SOP

| Project # | Applicant | | Date |
|---|---|---|---|
| SWG-2015-00145 | Corrigan OSB, LLC | | 8/10/2016 |
| Evaluators | | HUC | Locality |
| Wade Bryant, Christina Preze | | 12020002 | Polk County |

| Stream Name | Transect ID | Condition Index (RCI) | | |
|---|---|---|---|---|
| Bear Creek | BCRC2T1 | 3.25 | | |
| Bear Creek | BCRC2T2 | 2.90 | | |
| Bear Creek | BCRC2T3 | 3.00 | | |
| | Average | 3.05 | | |
| | | | | |
| | | | | |
| Bear Creek | IMPACTED | 2.20 | | |
| | | | | |
| RCI Delta | | | 0.850 | |
| Impact Factor | | | 2.00 | Delta RCI 1 or less |
| Linear Feet of Impact | | | 430 | |
| Compenesation Requirement | | | 731 | |
| | | | | |
| | | | | |
| | | | | |
| Bear Creek Ephemeral | BCRCEPH | 1.73 | Filled | |
| | | | | |
| RCI Delta | | | 1.73 | |
| Impact Factor | | | 5 | Filled |
| Linear Feet of Impact | | | 180 | |
| Compenesation Requirement | | | 1557 | |

| Total Compensation | 2288 |
|---|---|