
(Initials/Date)

DEP Form FD 9000-3 Physical/Chemical Characterization Field Sheet

SAMPLE ID 79539 ORG ID 21FLPNS LATITUDE 30.70930
 COUNTY Okaloosa (Crestview) WIN ID/STORET # G4NW0489 LONGITUDE -86.600209
 DATE 05/09/2019 TIME 12:15 CTZ SAMPLING AGENCY FL DEP - NWROC
 SITE NAME Williams Ck. W. Fork upstream of P.J. Adams Road - Antioch Rd RQ-2019-05-06-14
 FIELD ID/NAME G4NW0489 RECEIVING BODY OF WATER Yellow River WBID 331 Project SMP- TMDL Studies

RIPARIAN ZONE / STREAM FEATURES

LIMS ID:

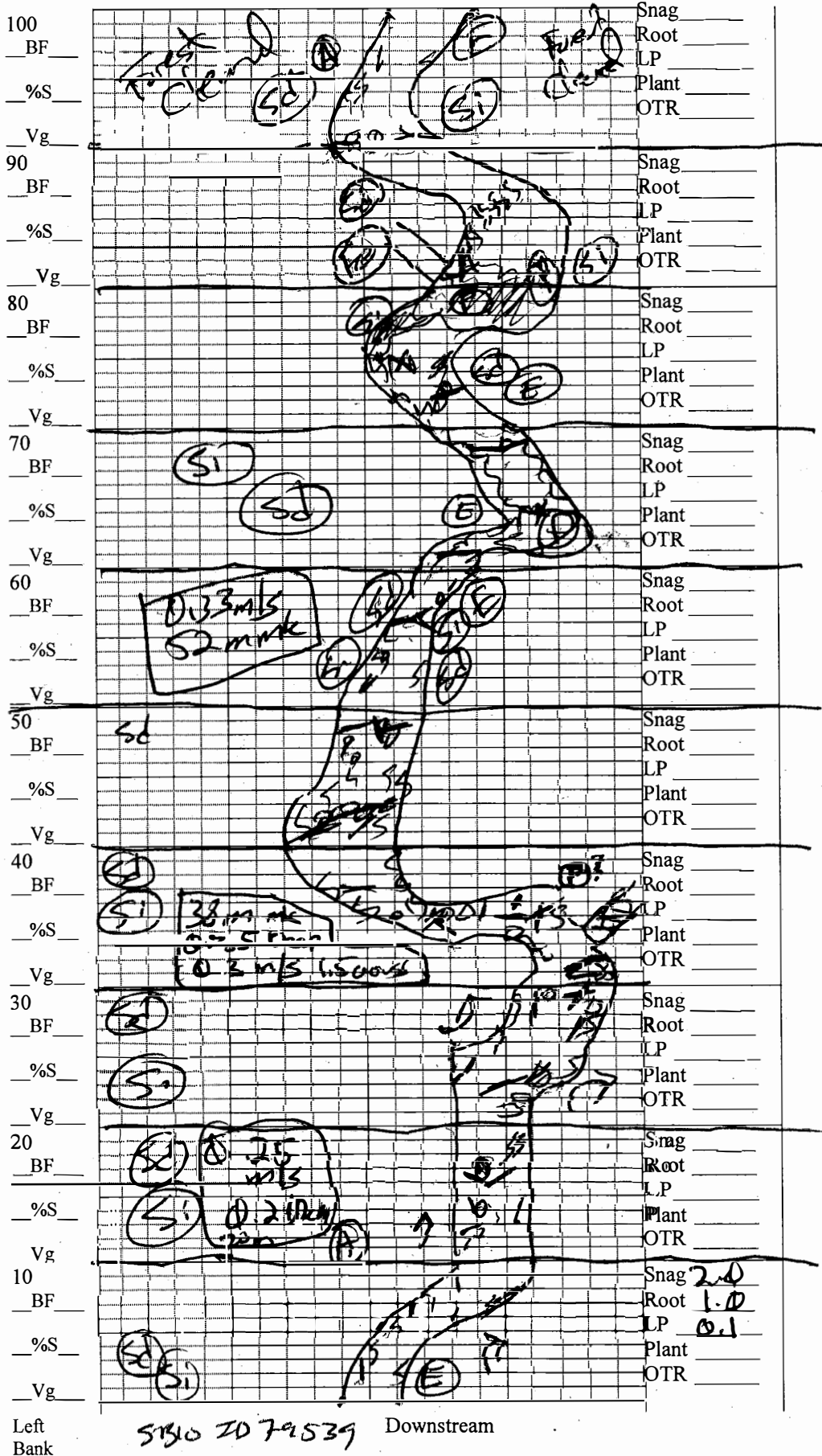
PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category): Forest/Natural ☐ Silviculture ☐ Field/Pasture ☐ Agricultural ☐ Residential ☐ Commercial ☐ Industry ☐ Other (Specify) ☐								Landscape Development Intensity Index (LDI) <u>7-8 2.37</u>
Local Watershed Erosion (select one): ☐ None ☐ Slight ☒ Moderate ☒ Heavy Local Watershed NPS Pollution: ☐ No evidence ☐ Slight ☐ Moderate ☒ Heavy								Typical Width (m) Depth (m)/Velocity (m/sec) Transect <u>300 m</u> <u>1.2</u> <u>0.33</u> <u>1.2</u> wide
Width of Riparian Vegetation (m) on Each Buffer Side Left Bank: <u>12</u> Right Bank: <u>17</u>				Hydrologic Modification Score (per FT 3101) <u>7-8</u>				m/s <u>0.33</u> m/s <u>0.33</u> m/s <u>0.33</u>
High Water Mark: <u>2.0</u> + <u>0.9</u> = <u>2.9</u> (m) (above present water level) (present depth) (above bed)				Artificially Impounded ☐ Yes ☒ No				m deep <u>0.2</u> m deep <u>0.2</u> m deep <u>0.2</u>
Artificially ☒ No ☐ Mostly recovered, more sinuous Channelized: ☐ Some recovery ☐ Recent, severe				Canopy Cover % ☐ Open ☐ Lightly Shaded (11-45%) ☒ Heavily Shaded ☐ Moderate Shaded (46-80%)				

SEDIMENT / SUBSTRATE

Sediment Oils ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse			Sediment Odors ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ Other (Specify):			Smothering of Substrates Sand Smothering: None ☐ Slight ☐ Moderate ☒ Severe ☒ Silt Smothering: None ☐ Slight ☐ Moderate ☒ Severe ☒ Algae Smothering: None ☐ Slight ☒ Moderate ☐ Severe ☐																																		
SUBSTRATE TYPE Assessment Tool: ☒ SCI ☒ RPS ☐ LVS ☐ LCI ☐ BioRecon			WATER QUALITY <table border="1"> <thead> <tr> <th>Depth (M)</th> <th>Temp. (°C)</th> <th>pH (SU)</th> <th>D.O. (MG/L)</th> <th>D.O. Sat (%)</th> <th>Cond. (UMHO/CM)</th> <th>Salinity (PPT)</th> <th>SECCHI (M)</th> </tr> </thead> <tbody> <tr> <td>Top: <u>0.2</u></td> <td><u>22.4</u></td> <td><u>6.40</u></td> <td><u>7.92</u></td> <td><u>91.3</u></td> <td><u>162.6</u></td> <td><u>0.08</u></td> <td><u>0.3</u></td> </tr> <tr> <td>Mid:</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td><u>4</u> VOB</td> </tr> <tr> <td>Bottom:</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td><u>0.3</u></td> </tr> </tbody> </table>						Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	D.O. Sat (%)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)	Top: <u>0.2</u>	<u>22.4</u>	<u>6.40</u>	<u>7.92</u>	<u>91.3</u>	<u>162.6</u>	<u>0.08</u>	<u>0.3</u>	Mid:							<u>4</u> VOB	Bottom:							<u>0.3</u>
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Bottom:							<u>0.3</u>																																	
Woody Debris (Snags) <u>14.1</u> <u>5</u> Undercut Banks / Roots <u>19.1</u> <u>5</u> Leaf Packs or Mat <u>3.4</u> <u>5</u> Aquatic Vegetation Rock or Shell Rubble..... Sand..... <u>64.8</u> <u>5</u> Mud / Muck / Silt Other Other			Water Odors Normal ☒ Petroleum ☐ Sewage ☐ Chemical ☐ Other ☐ Water Sample Taken? ☒ Yes ☐ No Sample Preserved? ☐ Yes ☐ No Lot Number: _____ Exp: _____ Algae Sample Taken? ☐ Yes ☒ No Sample Preserved? ☐ Yes ☐ No Lot Number: _____ Exp: _____			Water Surface Oils Normal ☐ Sheen ☐ Globbs ☐ Slick ☐ Other ☐ Color Tannic ☐ Green (Algae) ☐ Clear ☒ Other (Specify) ☐ Clarity Clear ☐ Slightly Turbid ☒ Turbid ☐ Opaque ☐																																		
ABUNDANCE <table border="1"> <thead> <tr> <th></th> <th>Not Obs.</th> <th>Rare</th> <th>Common</th> <th>Abundant</th> </tr> </thead> <tbody> <tr> <td>Periphyton:</td> <td>☐</td> <td>☐</td> <td>☒</td> <td>☐</td> </tr> <tr> <td>Fish:</td> <td>☐</td> <td>☐</td> <td>☒</td> <td>☐</td> </tr> <tr> <td>Aquatic Plants:</td> <td>☒</td> <td>☐</td> <td>☐</td> <td>☐</td> </tr> <tr> <td>Iron/Sulfur Bacteria:</td> <td>☐</td> <td>☒</td> <td>☐</td> <td>☐</td> </tr> </tbody> </table>				Not Obs.	Rare	Common	Abundant	Periphyton:	☐	☐	☒	☐	Fish:	☐	☐	☒	☐	Aquatic Plants:	☒	☐	☐	☐	Iron/Sulfur Bacteria:	☐	☒	☐	☐	System Type: Stream ☒ Lake ☐ Wetland ☐ Estuary ☐ Other(Specify) ☐ AMBIENT FIELD CONDITIONS / NOTES: Last 10m reach cleared for power lines 2m vegetation NO LVS Old Street 33040016 ☒ The antecedent hydrologic conditions have been met to my best knowledge.												
	Not Obs.	Rare	Common	Abundant																																				
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SAMPLING TEAM: Frank Butera, Stopher Slade			SIGNATURE: 			DATE: 05/09/2019																																		

Stream/River Habitat Sketch Sheet, Form FD 9000-4 (June 1, 2001)

Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).



WIN ID G4NW0489

Substrates: Code key, draw proportionate habitat abundance.



Snags



Roots/undercut banks



Leaf Packs (or mats)



Macrophytes



Sand BAR

P = Pool S = silt



SL = Silt Fe = Fe/Silt



Gravel

A = Algae E = Eroding Banks

Velocity:

0.33 m/s

Note where velocity measures were taken. 52m

Habitat Smothering:

Note areas (on map) where sand or silt is something substrates, limiting habitability.

Bank Stability:

Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:

Note areas (on map) where natural vegetation is altered or eliminated.

Average width 1.6 m

Average depth 0.4 m

WQ & chemistry taken @ 0 m

Pools 4 / gravel 5

Williams Creek W. Fork
upstream of Antioch Road
Project. TMDL Studies

Sampled By/Date: 5/09/2019

FB, SS

0 m Latt. 30.70949

0 m Long. 86.60056

100 m Latt. 30.70949

100 m Long. 86.60039

Left Bank

5150 20 79539 Downstream

0-10 meter [A]	Habitat Area (M)	Left Bank	Right Bank
	Snag 2.0	Bankfull	Bankfull
0m width (m) 0.0	Root 1.0	+	+
10m width 1.5	Leaf 0.1	Slope	Slope
Max Depth 0.5	Veg	+	+
Avg. Depth 0.4	Gravel	Veg	Veg
Rip. Buff L 1.0	Rock	+	+
Rip. Buff R 718	(S) (S)		

10-20 meter [B]	Habitat Area (M)	Left Bank	Right Bank
	Snag 1.0	Bankfull	Bankfull
20m width 1.5	Root 1.5	-	-
	Leaf 0.2	Slope	Slope
Max Depth 0.5	Veg	+	+
Avg. Depth 0.4	Gravel	Veg	Veg
Rip. Buff L 1.0	Rock	+	+
Rip. Buff R 718	(S) (S) (A)		

20-30 meter [C]	Habitat Area (M)	Left Bank	Right Bank
	Snag 3.0	Bankfull	Bankfull
30m width 1.5	Root 3.0	-	-
	Leaf 0.5	Slope	Slope
Max Depth 0.6	Veg	+	+
Avg. Depth 0.35	Gravel	Veg	Veg
Rip. Buff L 718	Rock	+	+
Rip. Buff R 718	(S) (S)		

30-40 meter [D]	Habitat Area (M)	Left Bank	Right Bank
	Snag 3.0	Bankfull	Bankfull
40m width 2.0	Root 5.0	-	-
	Leaf 0.5	Slope	Slope
Max Depth 0.8	Veg	+	+
Avg. Depth 0.4	Gravel	Veg	Veg
Rip. Buff L 1.4	Rock	+	+
Rip. Buff R 718	(S) (S)		

40 - 50 meter [E]	Habitat Area (M)	Left Bank	Right Bank
	Snag 4.0	Bankfull	Bankfull
50m width 1.5	Root 3.5	-	-
	Leaf 0.8	Slope	Slope
Max Depth 0.5	Veg	+	+
Avg. Depth 0.3	Gravel	Veg	Veg
Rip. Buff L 0.18	Rock	+	+
Rip. Buff R 718	(S) (S)		

50-60 meter [F]	Habitat Area (M)	Left Bank	Right Bank
	Snag 1.0	Bankfull	Bankfull
60m width 1.0	Root 2.0	+	-
	Leaf 0.2	Slope	Slope
Max Depth 0.4	Veg	+	-
Avg. Depth 0.3	Gravel	Veg	Veg
Rip. Buff L 718	Rock	+	+
Rip. Buff R 718	(S) (S) (E)		

60-70 meter [G]	Habitat Area (M)	Left Bank	Right Bank
	Snag 2.0	Bankfull	Bankfull
70m width 1.5	Root 8.0	+	+
	Leaf 0.5	Slope	Slope
Max Depth 0.8	Veg 0.5	-	-
Avg. Depth 0.4	Gravel	Veg	Veg
Rip. Buff L 718	Rock	+	+
Rip. Buff R 718	(P) (S) (E)		

70-80 meter [H]	Habitat Area (M)	Left Bank	Right Bank
	Snag 2.5	Bankfull	Bankfull
80m width 2.5	Root 3.5	-	-
	Leaf 0.2	Slope	Slope
Max Depth 0.9	Veg	-	-
Avg. Depth 0.4	Gravel	Veg	Veg
Rip. Buff L 1.5	Rock	+	+
Rip. Buff R 718	(S) (S) (E)		

80-90 meter [I]	Habitat Area (M)	Left Bank	Right Bank
	Snag 2.0	Bankfull	Bankfull
90m width 2.0	Root 2.5	+	-
	Leaf 0.2	Slope	Slope
Max Depth 0.9	Veg	-	-
Avg. Depth 0.5	Gravel	Veg	Veg
Rip. Buff L 2.0	Rock	+	+
Rip. Buff R 718	(E) (S) (S)		

90 - 100 meter [J]	Habitat Area (M)	Left Bank	Right Bank
	Snag 2.0	Bankfull	Bankfull
100m width 1.5	Root 0.5	-	-
	Leaf 0.2	Slope	Slope
Max Depth 0.5	Veg	-	-
Avg. Depth 0.3	Gravel	Veg	Veg
Rip. Buff L 2.0	Rock	+	+
Rip. Buff R 0.0	Cleared		

Station Name

Williams Ck West Fork upstream of
Antioch Rd Storet: G4NW0489

Date 05/09/2019

GPS Coordinates

0 meter
30.74949
86.60056

100 meter
30.71017
86.60039

Water Quality Measured at

0 m

Stream Velocity and location.

0.33 m/s 5 meter mark

Number of Pools & Location

24 40, 70-90
Silt smothering @ D, G+I

A-J

Sand Smothering @

A-J

Algae Smothering @

B, J

Degraded Banks @

F, G, H, I
Felsulfre @ I

Total Habitat	Sq. Meters	Percent
Snags	22.5	14.1
Roots	30.5	19.1
Leaf	3.4	2.1
Veg		
Rock		
Gravel		
Sand	103.6	64.8
Other		
Other		
Sum 1 st Habitat		35.3

SR10 20 7-9539

Notes: 52m with 0.33 m/s, 1.2m wide, 0.2 deep
Cleared Forest cleared @ 90m / 1 pool every 12 stream on d/s
4 pool / 20 m = 576 pools

DEP Form FD 9000-5 Stream/River Habitat Assessment Field Sheet

SAMPLING AGENCY: 21FLPNS		STORET STATION NUMBER: G4NW0489	DATE (MM/DD/YY):	RECEIVING BODY OF WATER: Yellow River
REMARKS: WBID 331	COUNTY: Okaloosa	LOCATION: Williams Creek West Fork upstream off of Antioch Road		FIELD ID/NAME: G4NW0489

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more major productive habitats present (snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock)	Three major productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two major productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less major productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>13</u>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Substrate Availability <u>17</u>	Greater than 30% major productive habitat present at site 20 19 18 17 16	16% to 30% major productive habitat, by aerial extent 15 14 13 12 11	6% to 15% major productive habitat 10 9 8 7 6	Less than 5% major productive habitat 5 4 3 2 1
Water Velocity <u>24</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec ≥0.33 0.31 0.29 0.27 >0.25 20 19 18 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec 0.25 0.21 0.17 0.13 >0.1 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 0.1 0.09 0.07 0.06 0.05 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec <0.05 0.04 0.03 0.01 <0.01 5 4 3 2 1
Habitat Smothering <u>14</u> ----- Primary Score <u>64</u>	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand, silt, or algae. 20 19 18 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand, silt, or algae. 15 14 13 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand, silt, or algae accumulation. 5 4 3 2 1
Secondary Habitat Components	Expected sinuosity given the stream width. No evidence of dredging or artificial straightening. No spoil banks.	Good sinuosity within old channelized area. Evidence of dredging in the past (>25 yrs) but mostly recovered.	Straightened with trapezoidal cross section, but has a small degree of sinuosity developed within channelized area.	Straightened or engineered by dredging, has trapezoidal or box cut cross section, lacks required pools. May have spoil banks.
Artificial Channelization <u>20</u>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Bank Stability Right Bank <u>5</u> Left Bank <u>6</u>	Bankfull > 60% of bank height. Slope of bank ≤ 60° from bankfull to top of bank. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank <u>8</u> Left Bank <u>5</u>	Width of vegetation greater than 18 m 10 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12m. human activities close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank <u>8</u> Left Bank <u>6</u> ----- Secondary Score <u>78</u> <u>58</u>	Over 80% of riparian surfaces consist of normal, expected, plant community for given sunlight & habitat conditions (e.g., native plants; tree, shrub, and forbs represented, if appropriate). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

118 TOTAL SCORE

Date: <u>05/09/17</u>	Analyst: <u>FB Butler</u>	Signature: <u>[Signature]</u>
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SBIO ID: 79539
62-160.800, F.A.C.

HA ID: 15864

Revision Date: March 1, 2014

DEP FORM FD 9000-25 Rapid Periphyton Survey Field Sheet

Site: Williams Creek West Fork upstream
Antioch Road

County:
Okaloosa

Date:
05/09/2019

Investigators: F. Butera

Transect (m)	Point 1=right 9=left	Algal Thickness Rank (N-6, X)	Estimated	Canopy Cover	Transect (m)	Point 1=right 9=left	Algal Thickness Rank (N-6, X)	Estimated	Canopy Cover	
0	1	N	No		60	1	N	No		
	2					2				
	3					3				
	4					4				
	5			96		5			96	
	6					6				
	7					7				
	8					8				
	9					9				
10	1	N	No		70	1	N	No		
	2					2				
	3					3				
	4					4				
	5			96		5			96	
	6					6				
	7					7				
	8					8				
	9					9				
20	1	N	No		80	1	N	No		
	2					2				
	3					3				
	4					4				
	5			96		5			96	
	6					6				
	7					7				
	8					8				
	9					9				
30	1	N	No		90	1	N	No		
	2					2				
	3					3				
	4					4				
	5			96		5			96	
	6					6				
	7					7				
	8					8				
	9					9				
40	1	N	No		100	1	N	No		
	2					2				
	3					3				
	4					4				
	5			96		5				
	6					6				
	7					7				
	8					8				
	9					9				
50	1	N	No		100	1	N	No		
	2					2				
	3					3				
	4					4				
	5			96		5				
	6					6				
	7					7				
	8					8				
	9					9				

STORET Station Number:
G4NW0489

Secchi depth 0.2
Estimated? 00

points ranked 4-6 2
total points assessed 99
% points ranked 4-6 2

Check accompanying data collected at same site/date.
Algal mat sample
Linear Veg Survey
Habitat Assessment
SCI/Biorecon
Water sample
RQ-2019-05-06-14

Algal Thickness Rank
N rough, no algae, slimy, algae up to 1mm
3 >1mm - 6mm
4 >6mm - 20mm
5 >20mm - 10 cm
6 >10 cm

SBIO Visit ID. 79539

RPS ID. 9329

Record "N" and check "Estimated" for points deeper than the Secchi depth; algae are presumed absent. Check "Estimated" if thickness estimated for deep points which can be seen but not reached.
Record "X" for points shallower than Secchi depth for which substrate cannot be seen or reached with the hand. No estimated rank.
Record canopy cover as the number of small densiometer quadrants (out of 96) that HAVE canopy cover. Measure facing upstream at point 4, 5, or 6.
Collect algal mat sample following DEP SOP FS 7240 if the percentage of total sampled points with a thickness rank of 4, 5, or 6 is >20%.

DEP FORM FD 9000-32: LINEAR VEGETATION SURVEY FIELD SHEET

Date: 5/9/19

Storet Number: G4NW0489

Sig nature:

Comments: Less Than 2m² Vegetation. LUS not performed

Instructions: Note taxa growing in the water with a checkmark if present, "D" if dominant, and "C" if codominant (dominance only if 1 m² of taxa present). Note in the boxes below if no dominant are selected, and note total macrophyte abundance rank for each section. Only the most common taxa are listed, so use blank spaces for additional taxa names.

[illegible]

Field ID G4NW4489

RPS ID

SBIO ID 79539

VPDB ID N/A

LIMS ID
62-160,800, F.A.C.