



FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
STRATEGIC MONITORING PROGRAM FIELD SHEET

March 2017

PAGE 1 OF 1

Data Qualified?

Yes / No

Location/STORET Station Name: Unnamed Drain of Spruce Creek @ CR421

Date: 06/21/2017

(mm/dd/yyyy)

STORET # G5CE0022

WBID: 2673

Latitude: 29.083983

(Decimal Degrees)

County: Volusia

RQ - 2017-06-05-74

ORG ID: 21FLLEN

Longitude: -81.0646361

(Decimal Degrees)

Receiving Body of Water: _____

Field ID: G5CE0022

Sampling Team Members						WQ Measurements	Sample Collection	Documentation	Preservation	Preservation Check	Sampling Equipment						
<u>Mike Linger</u>						☒	☒	☒	☒	☒	☒ Sample Container	☐ Van Dorn	☐ Pole				
											☐ Carboy	☒ Syringe					
											☐ Dipper	☐ Other					
<u>Mike Dorman</u>						☐	☐	☐	☐	☐	Equipment ID _____						
											Collection Method						
											☒ Wading	☐ Via Boat					
						☐	☐	☐	☐	☐	☐ From Shore	☐ Canoe/Kayak					
											☐ Other (note below)	☐ Electric Motor					
												☐ Gasoline Motor					
Water Level: Dry / Pooled / Low / <u>Normal</u> / High / Flooded						Matrix: <u>Fresh</u> / <u>Marine</u> / DI											
Meter ID# <u>Boop / Non</u>						Photos: <u>Yes</u> / No <u>NESW</u>						Tide Falling: Yes / No / <u>NA</u>					
Time Zone	Time	Sample Depth (m)	Total Depth (m)	DO (mg/L)	DO (%SAT)	pH	Salinity (ppt)	Secchi Disk (m)	Sp COND (umhos/cm)	Temp. (C°)							
<u>EST</u>	<u>10:46</u>	<u>0.2</u>	<u>0.3</u>	<u>0.7</u>	<u>8</u>	<u>7.1</u>	<u>0.3</u>	<u>0.3(s)</u>	<u>596</u>	<u>25.6</u>							
CEN																	

Biological Samples Collected: None HA SCI RPS Algae ID LVS LVI Other _____

SBIO ID Numbers: SBIO-ID: 77738 RPS-ID: _____ Macrophyte-ID: _____ LIMS#: 1908173

Parameter Suite	Parameter Methods	Preservation	Acid Lot#	Expiration	pH Check
Preserved Nutrients	☒ W-NH3 / W-NO2NO3 / W-TKN / W-TOC / W-S-A-TP	☒ Ice ☒ H2SO4	<u>7093010</u>	<u>4/3/18</u>	☒ <2
Metals	☐ W-ICPMS ☐ W-ICP	☐ Ice ☐ HNO3			☐ <2
Filtered Nutrients	☒ W-PO4-F ☒ Field Filtered 0.45 um Filter	☒ Ice			
Chlorophyll	☒ CHLSUITE-W	☒ Ice			
Physical/Aggregate (Fresh)	☒ Alkalinity / W-F / W-TSS / TURBIDITY / W-CH-IC / W-COLOR / W-SO4-IC / W-TDS	☒ Ice			
Physical/Aggregate (Marine)	☐ Alkalinity / W-F / W-TSS / TURBIDITY	☐ Ice			
Macroinvertebrates	☐ MI-FW-QLDC	☐ Formalin			
Periphyton	☐ ALGAE-ID	☐ Ice			
Microbiology	☐ E Coli ☐ F Coli ☐ Enterococci ☐ qPCR	☐ Ice			
Tracers	☐ W-SUC-AA-R ☐ W-UHERB-AA ☐ W-AHERB-AA	☐ Ice			
Pesticides	☐ W-PSNP-TQ ☐ W-AHERB-AA ☐ W-PYR-AA-R ☐ W-PCL-SQ-R ☐ W-UHERB-AA ☐ W-GLYPH ☐ W-SUC-AA-R	☐ Ice ☐ Other			

Contains
1:1
Sulfuric Acid
SA - 7093010
EXP: 04/03/18
Warning!
See SDS

Notes:

Unnamed Drain of Spruce
Creek @ CR421

G5CE0022

Field ID ↑

STORET ↓

G5CE0022

Date: 06/21/2017
RQ-2017-06-12-44

Signature: [Signature]

Date: 6/21/17

Field Parameters Entered into LIMS: LMD 7/5/17
(Initials/Date)

Field Parameters QC in LIMS: _____
(Initials/Date)

Date Migrated to STORET: _____
(Initials/Date)

Field Sheets Scanned/Saved: LMD 7/5/17
(Initials/Date)

FDEP FORM FD 9000-3: PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SAMPLE ID 77738 ORG ID 21FLCEN LATITUDE 29.0839
COUNTY Volusia STORET # GSCE0022 LONGITUDE -81.0646
DATE 6/21/17 TIME 1046 SAMPLING AGENCY FDEP CEROC
SITE NAME Unnamed Drain of Spruce Crk @ CR 421
FIELD ID/NAME GSCE0022 RECEIVING BODY OF WATER Spruce Creek

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):								Landscape Development Intensity Index (LDI)	
Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industry	Other (Specify)		
<u>100</u>									
Local Watershed Erosion (select one): ☐ None ☒ Slight ☐ Moderate ☐ Heavy								Typical Width (m) Depth (m)/Velocity (m/sec) Transect	
Local Watershed NPS Pollution: ☒ No evidence ☐ Slight ☐ Moderate ☐ Heavy								<u>3.1</u> m wide	
Width of Riparian Vegetation (m) on Each Buffer Side				Hydrologic Modification Score (per FT 3101)					
Left Bank: <u>>18</u> Right Bank: <u>>18</u>									
High Water Mark: <u>.4</u> + <u>.3</u> = <u>.7</u> (m) (above present water level) (present depth) (above bed)				Artificially Impounded ☐ Yes ☒ No					
Artificially ☒ No ☐ Mostly recovered, more sinuous				Canopy Cover % ☐ Open ☐ Lightly Shaded (11-45%)					
Channelized: ☐ Some recovery ☐ Recent, severe				☒ 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								
			Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	D.O. Sat (%)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)	
			Top: <u>0.3</u>	<u>25.6</u>	<u>7.1</u>	<u>0.7</u>	<u>8</u>	<u>596</u>	<u>0.3</u>	<u>0.3</u>	
			Mid: <u>0.2</u>							☒ VOB	
			Bottom								
			Meter ID: <u>BOOP NON</u>							TOTAL DEPTH <u>0.3</u>	
Woody Debris (Snags)			Water Odors Normal ☒ Petroleum ☐			Water Surface Oils Normal ☒ Sheen ☐					
Undercut Banks / Roots			Sewage ☐ Chemical ☐ Other ☐			Globs ☐ Slick ☐ Other ☐					
Leaf Packs or Mat			Water Sample Taken? ☒ Yes ☐ No			Color Tannic ☒ Green (Algae) ☐					
Aquatic Vegetation			Sample Preserved? ☒ Yes ☐ No			Clear ☐ Other (Specify) ☐					
Rock or Shell Rubble			Lot Number: <u>7093010</u> Exp: <u>4/3/18</u>								
Sand			Algae Sample Taken? ☐ Yes ☒ No			Clarity Clear ☐ Slightly Turbid ☒					
Mud / Muck / Silt			Sample Preserved? ☐ Yes ☐ No			Turbid ☐ Opaque ☐					
Other			Lot Number: Exp:								
Other											
ABUNDANCE			System Type: Stream ☒ Lake ☐ Wetland ☐ Estuary ☐ Other (Specify) ☐								
Periphyton: ☐ Not Obs. ☒ Rare ☐ Common ☐ Abundant			AMBIENT FIELD CONDITIONS / NOTES:								
Fish: ☐ ☐ ☒ ☐			<u>Upper 90°s, humid, light rain</u>								
Aquatic Plants: ☐ ☐ ☐ ☒			☒ The antecedent hydrologic conditions have been met to my best knowledge.								
Iron/Sulfur Bacteria: ☐ ☒ ☐ ☐											

SAMPLING TEAM

Mike Drennon / Mike Linger

SIGNATURE:

DATE:

6/21/17

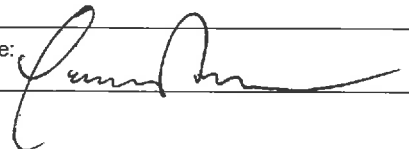
DEP Form FD 9000-5 Stream/River Habitat Assessment Field Sheet

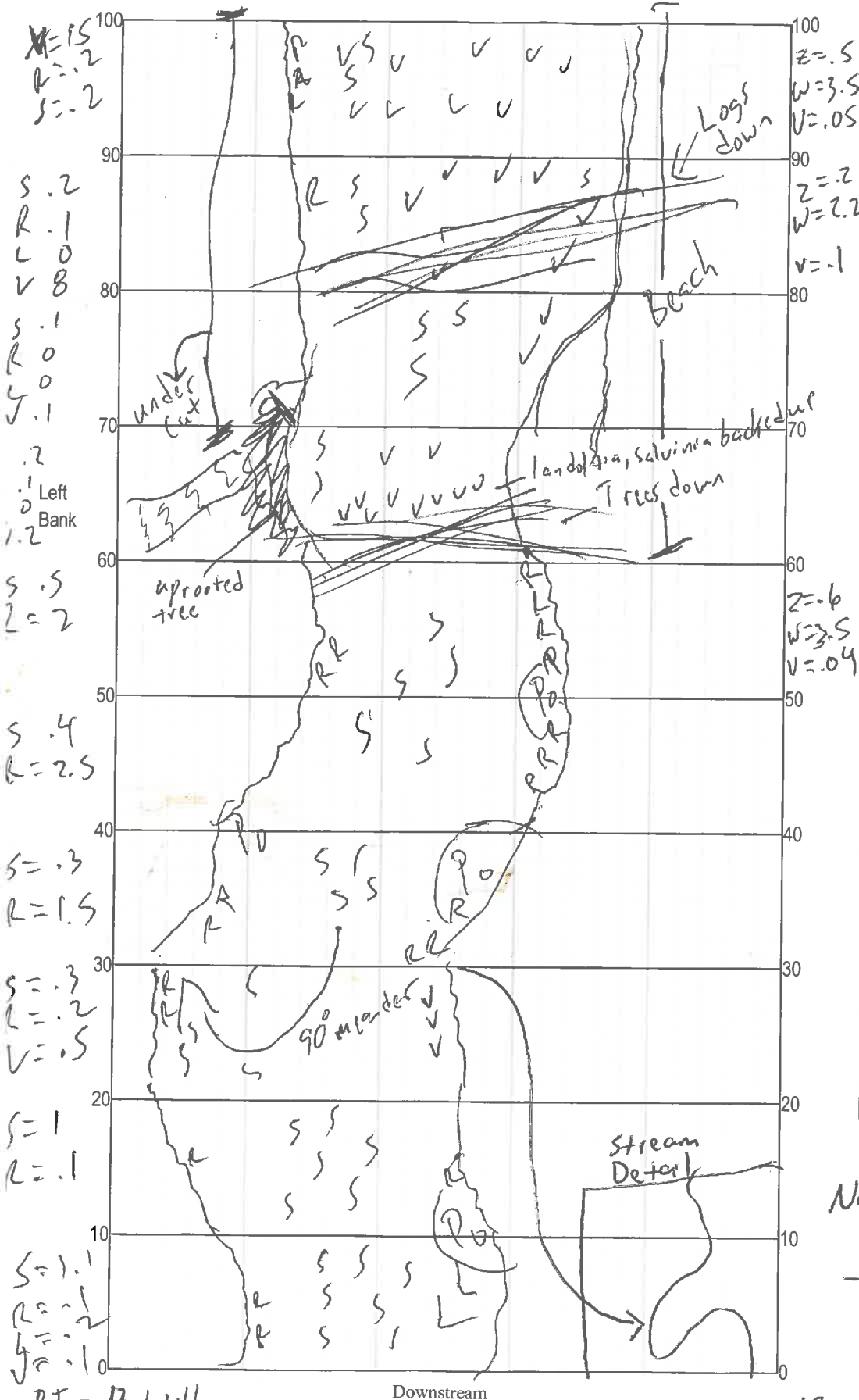
SAMPLING AGENCY: <u>FDEP - CEROC</u>		STORET STATION NUMBER: <u>GSCCE0022</u>	DATE (MM/DD/YY): <u>6/21/17</u>	RECEIVING BODY OF WATER: <u>Spruce Creek</u>
REMARKS:	COUNTY: <u>Volusia</u>	LOCATION: <u>Unnamed Drain of Spruce Creek</u>	FIELD ID/NAME: <u>GSCCE0022</u>	

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>12</u>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Substrate Availability <u>8</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>7</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>13</u> Primary Score <u>40</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>16</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>8</u> Left Bank <u>6</u> <u>14</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>10</u> Left Bank <u>10</u> <u>20</u>	Width of vegetation greater than 18 m 10 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. 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>6</u> Left Bank <u>6</u> <u>12</u> Secondary Score <u>62</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

102

TOTAL SCORE

Date: <u>6/21/17</u> <u>LM</u>	Analyst: <u>Mike Drennan</u>	Signature: 
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Location: Unnamed Drain at Spruce Crk @ CR 421
 Date: 6/21/17

Sampler: Mike Drennan / Linger

100 m: Latitude 29.0839
 Longitude -81.0646

0 m: Latitude 29.0833
 Longitude -81.0638

Substrates: Code key, draw proportionate habitat abundance. %

☒ S	Snags	<u>1.4</u>
☒ R	Roots/undercut banks	<u>2.2</u>
☒ L	Leaf Packs (or mats)	<u>.06</u>
☒ V	Aquatic Macrophytes	<u>7.7</u>
☐		
☐		
☐ P	Pools	total # observed = <u>4</u> # range expected = <u>3-7</u>

Average width 3.1 m
 Average depth .45 m

Velocity measured at 55, 85 meter mark.

WQ & chemistry taken at 100 meter mark.

Habitat Smothering:
 Note areas (on map) where sand or silt is smothering 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.

Plants observed / other notes:

Note Exotics: *Hydrilla*, *Hydrophyllum*,
Alternanthera, *Salvinia*
 - Lots of *Najas* first few sections

$$BF = 17 + WL$$

$$BH = 1m > BF$$

62-160.800, F.A.C

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

$S = 4.3$
 $R = 6.8$
 $L = .2$
 $V = 23.9$

$$35.2/310 = 11\%$$

$$\bar{Z} = .45m$$

$$\bar{W} = 3.1m$$

$$\bar{V} = .06 m/s$$

Revision Date: March 1, 2014

DEP FORM FD 9000-25 Rapid Periphyton Survey Field Sheet

Site: <u>Unnamed Drain of Spruce Creek @ CR421</u>					County: <u>Volusia</u>		Date: <u>6/21/17</u>		Investigators: <u>Mike Linger</u>		
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	STORET Station Number: <u>G5CE0022</u>	
0	1	N		84	60	1	3		76	Secchi depth <u>0.34</u>	
	2	N				2	3			Estimated?	
	3	N				3	N			# points ranked 4-6 <u>2</u>	
	4	N				4	N			total points assessed <u>99</u>	
	5	N				5	N			% points ranked 4-6 <u>2</u>	
	6	N				6	N				
	7	N				7	N				
	8	N				8	N				
	9	N				9	N				
10	1	N		64	70	1	N		80	Check accompanying data collected at same site/date.	
	2	N	X			2	N			Algal mat sample	
	3	N	X			3	N			Linear Veg Survey	☒
	4	N	X			4	N			Habitat Assessment	☒
	5	N	X			5	N			SCI/Biorecon	
	6	N	X			6	N			Water sample	☒
	7	N	X			7	N				
	8	N	X			8	N				
	9	N				9	N				
20	1	N		68	80	1	N		88	Algal Thickness Rank	
	2	N	X			2	N			N	rough, no algae, slimy, algae up to 1mm
	3	N	X			3	N			3	>1mm - 6mm
	4	N	X			4	N			4	>6mm - 20mm
	5	N	X			5	N			5	>20mm - 10 cm
	6	N	X			6	N			6	>10 cm
	7	N	X			7	N				
	8	N				8	N				
	9	N				9	N				
30	1	N		72	90	1	3		92		
	2	N				2	3				
	3	N				3	N				
	4	N				4	N				
	5	N				5	N				
	6	N				6	N				
	7	N				7	N				
	8	N				8	3				
	9	N				9	N				
40	1	N		80	100	1	N		88		
	2	N				2	N				
	3	N	X			3	N				
	4	N	X			4	N				
	5	N	X			5	N				
	6	N	X			6	N				
	7	N	X			7	N				
	8	N				8	N				
	9	N				9	N				
50	1	N		40		1	N			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.	
	2	N				2	N				
	3	N				3	N				
	4	N				4	N				
	5	N				5	N				
	6	N				6	N				
	7	N				7	N				
	8	N				8	N				
	9	N				9	N				
					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

Waterbody: Unnamed Drain of Spruce Creek Date: 6/21/17 County: Volusia Storet Number: GSCF0022

Analyst: Mike Linger / Mike Danner Signature: [Signature]

Comments:

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.

HERBACEOUS SPECIES	Meter Mark										Specimen collected (check)	HERBACEOUS SPECIES	Meter Mark										Specimen collected (check)
	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100			0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	
Alternanthera philoxeroides	✓	✓	✓	✓	✓	✓						Micranthemum glomeratum											
Bacopa caroliniana												Micranthemum umbrosum											
Bacopa monnieri												Myriophyllum aquaticum			✓	✓	✓	✓	✓	✓	✓	✓	
Bidens mitis												Najas guadelupensis	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Boehmeria cylindrica												Nuphar luteum											
Centella asiatica												Orontium aquaticum											
Ceratophyllum demersum	✓					✓	✓	✓	✓	✓		Panicum hemitomon											
Chara												Panicum repens											
Cicuta maculata	✓		✓			✓	✓	✓	✓			Panicum rigidulum											
Cladium jamaicense												Pistia stratioides											
Colocasia esculenta												Polygonum glabra											
Commelina diffusa						✓				✓		Polygonum hydropiperoides											
Commelina virginica												Polygonum punctatum											
Crinum americanum												Pontedaria cordata											
Diodia virginiana												Potamogeton illinoensis											
Eichhornia crassipes												Ruellia simplex											
Eleocharis (wispy viviparous)												Sacciolepis striata											
Hydrilla verticillata	✓											Sagittaria kurziana											
Hydrocotyle	✓			✓	✓	✓						Sagittaria lancifolia											
Hygrophila polysperma	✓			✓	✓	✓	✓	✓	✓	✓		Sagittaria latifolia											
Hymenocallis												Salvinia minima	✓	✓		✓	✓	✓	✓	✓	✓	✓	
Lachnanthes caroliniana												Samolus parviflora	✓										
Landoltia punctata						✓	✓	✓	✓	✓		Saururus cernuus											
Lemna						✓	✓	✓	✓	✓		Sparganium americanum											
Limnophila sessiflora												Typha											
Ludwigia leptocarpa												Vallisneria americana											
Ludwigia palustris												Zizania aquatica											
Ludwigia peruviana																							
Ludwigia repens	✓			✓	✓	✓	✓	✓	✓	✓													
Luziola fluitans																							
If no Dominant or Co-Dominant were selected, indicate with "X"	X	X	X	X	X																		
Indicate % cover macrophytes per section																							
0-5% Macrophyte Coverage	X	X	✓	✓	✓																		
>5 and ≤10% Macrophyte Coverage							✓																
>10 and ≤25% Macrophyte Coverage								✓															
>25 and ≤50% Macrophyte Coverage						✓			✓														
> 50% Macrophyte Coverage										✓													