



FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION STRATEGIC MONITORING PLAN FIELD SHEET

January 2020

Meter Passed End

of Day CCV

☒ Yes / ☐ No

WIN Station Name: Spruce Creek @ Pioneer Trail

Date: 12/14/2021

WIN/Field ID: G5CE0153

WBID: 2674

ENR: -

Latitude: 29.0505

County: VOLUSIA

Org ID: 21FLCEN

Longitude: -81.05

Receiving Body of Water: Upper East Coast

RQ: 2021-11-15-17

Sampling Team Members	WQ Measurements	Sample Collection	Documentation	Preservation	Preservation Check
☒ Elizabeth Bates	☒	☐	☒	☒	☒
☒ Leif Boman	☐	☒	☐	☒	☒
☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐

Sampling Equipment	
☒ Sample Container	☐ Carboy
☐ Dipper	☐ Van Dorn
☒ Syringe	☐ Pole
Depth measured with: Secchi	
Secchi Equipment ID: Knothead	
Collection Method	
☒ Wading	☐ Canoe/Kayak
☐ From Shore	☐ Electric Motor
☐ Other	☐ Gasoline Motor

Water Level: ☒ Normal ☐ Low ☐ High ☐ Dry ☐ Pooled ☐ Flooded		Meter ID# CRAW DADDY	
Photos: YES	Flow: FLOW	Tide:	Tide Times: High: Low:
Biological Samples Collected: ☐ None ☒ HA ☐ SCI ☒ RPS ☐ Algae ID ☐ LVS ☐ LVI Other:			
SBIO ID Numbers: SBIO 83662 RPS 9843 HA 17141			LIMS 2295206
Notes: SUNNY WARM			

Duplicate Sample

Time Zone: EST	Time:	Field ID: (WIN ID_DUP)
WIN DMT Activity ID:		

Blank

Time Zone: EST	Time: 1300	Field ID: FB_12142021 (Blank Type_DDMYYYY)
DI Source: Lab	Location: Side of road	
DI Type: Field Blank	Equipment ID:	
DI Container (Name/ID): #6	DI Container Type: Carboy	

LIMS EVENT ID: CEN-DIST-2021-12-15-01	WIN Import ID: 30792
Enter Field Parameters, Verify Station ID In LIMS DMT: KWM 1/26/22 (Initials/Date)	QC Station ID, Field Parameters In LIMS DMT: EB 1/31/22 (Initials/Date)
Scan/Save Field Sheets (Initials/Date)	Migrate Data to WIN: KWM 1/31/22 (Initials/Date)
Verify Data In WIN: (Initials/Date)	



RQ-2021-11-15-17

Customer: WQAP

Project ID: SMP

Collected By: Elizabeth Bates, Leif Boman

Field Report Prepared By: Elizabeth Bates

Sampling Agency: FDEP

Place Label Here

WIN ID/Field ID:



G5CE0153

Location: Spruce Creek @ Pioneer Trail

Comments:

Matrix: Fresh

(Check one)

☒ GRAB☐ COMPOSITE

Date	Time	DO (mg/L)	DO (%SAT)	Temp. (C°)	pH	Sample Depth (m)	Secchi Disk (m)	Total Depth (m)	Sp COND (µmhos/cm)	Salinity (PPT)		
	1230 EST	6.55	73.2	20.7	6.9	0.3	0.5 ☒ VOB (S)	0.5	324.8	0.16		
12/14/2021							Central Lab please use top row for login purposes					
	EST											
Parameter Suite		Parameter Methods				Preservation		pH Check	# Bottles sent to Lab	Bottle Group		
Preserved Nutrients (P-500ML)		☒ W-NH3 / W-NO2NO3 / W-TKN / W-TOC / W-S-A-TP				☒ Ice ☒ H2SO4*		☒ <2	1	A		
		Lot #	SA1105060		Exp:	4/30/22						
Metals (P-500ML)		☒ W-ICPMS ☒ W-ICP ☒ W-HARD				☒ Ice ☒ HNO3*		☒ <2	1	A		
		Lot #	NA1105100		Exp:	6/7/22						
Filtered Nutrients (P125ML)		☒ W-PO4-F ☒ Field Filtered 0.45 µm Filter				☒ Ice			1	A		
		Filter Lot #	17135566									
		Syringe Lot #	1112035									
Chlorophyll (BP-1L)		☒ CHLSUITE-W				☒ Ice			1	A		
Physical/Aggregate (Fresh) (P-1L)		☒ Alkalinity / W-F / W-TSS / TURBIDITY / W-CL-IC / W-COLOR / W-SO4-IC / W-TDS				☒ Ice			1	A		
Physical/Aggregate (Marine) (P-1L)		☐ Alkalinity / W-BR-IC / W-F / W-TSS / TURBIDITY				☐ Ice						
Macroinvertebrates (PJ-2L)		☐ MI-FW-QLDC	Formalin Lot #			☐ Formalin						
Periphyton (PT-50ML)		☐ ALGAE-ID				☐ Ice						
Microbiology (Contract Lab Bottle)		☒ E Coli ☐ F Coli ☐ Enterococci ☐ Contract Lab				☒ Ice			1	A		
Molecular (QPCR-P-500ML)		☐ PCR-HF183 ☐ PCR-BacR ☐ PCR-DG3 ☐ PCR-GULL2 ☐ PCR-GFD				☐ Ice						
Tracers (BG-500ML)		☐ W-E8321-DI ☐ W-E8321-MS				☐ Ice						
Pesticides (BG-500ML) (BG-1L)		☒ W-E8321-DI	☒ W-E8321-MS	☒ W-PSNP-TQ	☐ W-CT-CL-R	☒ Ice			5	A		
		☐ W-PCL-TQ-R	W-CARB-AA (5 ml of MCAA** Buffer Solution)									
Phytoplankton/Periphyton						☐ Ice						
Name: Elizabeth Bates Leif Boman		Signature:				Date: 12/14/2021						

*2.0 ml of Preservative used unless noted otherwise.

**MCAA: Monochloroacetic acid buffer solution



RQ- 2021-11-15-17

Collected By: Elizabeth Bates, Leif Boman

Customer: WQAP

Field Report Prepared By: Elizabeth Bates, Leif Boman

Project ID: SMP

Sampling Agency: FDEP

BLANK



Field ID: FB 12142021

Comments:

Matrix: Field Blank

(Check one) ☐ COMPOSITE ☒ GRAB

Date

Time

DI Source: Lab

12/14/2021

1300

EST

Parameter Suite	Parameter Methods	Preservation	pH Check	# Bottles sent to Lab	Bottle Group
Preserved Nutrients (P-500ML)	☒ W-NH3 / W-NO2NO3 / W-TKN / W-TOC / W-S-A-TP Lot # SA1105060 Exp: 4/30/22	☒ Ice ☒ H2SO4	☐ <2	1	D
Metals (P-500ML)	☐ W-ICPMS ☐ W-ICP Lot # Exp:	☐ Ice ☐ H2SO4	☐ <2		
Filtered Nutrients (P125ML)	☒ W-PO4-F Filter ☒ Field Filtered 0.45 µm Filter Lot # Syringe Lot #	☒ Ice		1	D
Physical/Aggregate (Fresh) (P-1L)	☒ Alkalinity / W-F / W-TSS / TURBIDITY / W-CI-IC / W-COLOR / W-SO4-IC / W-IC / TDS	☒ Ice		1	D
Physical/Aggregate (Marine) (P-1L)	☐ Alkalinity / W-BR-IC / W-F / W-TSS / TURBIDITY	☐ Ice			
Tracers (BG-500ML)	☐ W-E8321-DI ☐ W-E8321-MS	☐ Ice			
Pesticides (BG-500ML) (BG-1L)	☐ W-E8321-DI ☐ WE8321-MS ☐ W-PSNP-TQ ☐ W-CT-CL-R ☐ W-PCL-TQ-R ☐ W-CARB-AA (5 ml of MCAA** Buffer Solution)	☐ Ice			
Name: Elizabeth Bates Leif Boman		Signature: 		Date: 12/14/2021	

*2.0 ml of Preservative used unless noted otherwise.

**MCAA: Monochloroacetic acid buffer solution

RQ-2021-11-15-17
DEP Form FD 9000-5 Stream/River Habitat Assessment Field Sheet

SAMPLING AGENCY: <u>2IFCEN</u>	STORET STATION NUMBER: <u>G5CE0153</u>	DATE (MM/DD/YY): <u>12/14/21</u>	RECEIVING BODY OF WATER: <u>Upper East Coast</u>
REMARKS:	COUNTY: <u>Volusia</u>	LOCATION: <u>Spence Creek @ Pioneer Trail</u>	FIELD ID/NAME:

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>8</u>	20 19 18 17 16	15 14 13 12 11	10 9 <u>8</u> 7 6	5 4 3 2 1
Substrate Availability <u>5</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>15</u> <u>4.0, 3.9</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 <u>15</u> 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>18</u> Primary Score <u>46</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 or straightening 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>9</u>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Bank Stability	Bankfull > 60% of bank height. Slope of bank ≤ 60° from bankfull to top of bank. Bankfull is within or above the woody root zone with few raw, eroded areas.	Only meets 2 of the 3 requirements for optimal bank stability.	Only meets 1 of the 3 requirements for optimal bank stability.	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the woody root zone with raw, eroded areas.
Right Bank <u>5</u> Left Bank <u>4</u>	10 9	8 7 6	5 4	3 2 1
Riparian Buffer Zone Width	Width of vegetation greater than 18 m	Width of vegetation >12 to 18m	Width of vegetation 6 to 12 m. human activities close to system	Less than 6 m of buffer zone due to intensive human activities
Right Bank <u>9</u> Left Bank <u>10</u>	10 9	8 7 6	5 4	3 2 1
Riparian Zone Vegetation Quality	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.	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed.	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious.	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions).
Right Bank <u>4</u> Left Bank <u>8</u> Secondary Score <u>51</u>	10 9	8 7 6	5 4	3 2 1

97 TOTAL SCORE

Date: <u>12/14/21</u>	Analyst: <u>Leif Boman, Elizabeth Bates</u>	Signature: <u>[Signature]</u>
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DEP Form FD 9000-3 Physical/Chemical Characterization Field Sheet

SAMPLE ID 2021-11-15-17 ORG ID _____ LATITUDE 29.05053868
 COUNTY Volusia STORET # G5CED153 LONGITUDE -81.04663748
 DATE 12/14/21 TIME 12:30 SAMPLING AGENCY 21FLCEN
 SITE NAME Spence Creek @ Pioneer Trail
 FIELD ID/NAME G5CED153 RECEIVING BODY OF WATER Upper East Coast

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category): Forest/Natural ☐ Silviculture ☐ Field/Pasture ☐ Agricultural ☐ Residential ☐ Commercial ☐ Industry ☐ Other (Specify) ☐ <u>15</u> <u>40</u> <u>45</u>								Landscape Development Intensity Index (LDI) <u>1</u> <u>6170/Level 3</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>5</u> m wide <u>5</u> sec/m			
Width of Riparian Vegetation (m) on Each Buffer Side Left Bank: <u>718m</u> Right Bank: <u>718m</u>				Hydrologic Modification Score (per FT 3101) _____		m/s _____ m/s _____ m/s _____			
High Water Mark: <u>0.8</u> + _____ = _____ (m) (above present water level) (present depth) (above bed)				Artificially Impounded ☐ Yes ☐ No		m deep <u>0.5</u> m deep <u>0.3</u> m deep <u>0.3</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 <u>NO</u> 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) <u>knockhead</u> SECCHI (M) Top: <u>0.3</u> <u>20.7</u> <u>6.9</u> <u>6.5</u> <u>73.2</u> <u>324.8</u> <u>0.16</u> <u>0.5</u> Mid: _____ Bottom: _____ Meter ID: <u>Craw Daddy</u>		TOTAL DEPTH <u>0.5</u> ☒ VOB	
Woody Debris (Snags) <u>4</u> Undercut Banks / Roots _____ Leaf Packs or Mat <u>1</u> Aquatic Vegetation _____ Rock or Shell Rubble.. _____ Sand..... _____ Mud / Muck / Silt _____ Other _____ Other _____		Water Odors Normal ☒ Petroleum ☐ Sewage ☐ Chemical ☐ Other ☐		Water Surface Oils Normal ☒ Sheen ☐ Globs ☐ Slick ☐ Other ☐	
ABUNDANCE Not Obs. Rare Common Abundant Periphyton: ☐ ☒ ☐ ☐ Fish: ☐ ☒ ☐ ☐ Aquatic Plants: ☐ ☒ ☐ ☐ Iron/Sulfur Bacteria: ☒ ☒ ☐ ☐		Water Sample Taken? ☒ Yes ☐ No Sample Preserved? ☒ Yes ☐ No Lot Number: _____ Exp: _____		Color Tannic ☒ Green (Algae) ☐ Clear ☐ Other (Specify) ☐	
Algae Sample Taken? ☐ Yes ☒ No Sample Preserved? ☐ Yes ☐ No Lot Number: _____ Exp: _____		Clarity Clear ☒ Slightly Turbid ☐ Turbid ☐ Opaque ☐		System Type: Stream ☒ Lake ☐ Wetland ☐ Estuary ☐ Other (Specify) ☐	
AMBIENT FIELD CONDITIONS / NOTES: <u>Sunny / partly cloudy warm</u> ☒ The antecedent hydrologic conditions have been met to my best knowledge.					
SAMPLING TEAM <u>Leif Boman, Liz Bates</u>		SIGNATURE: <u>Liz Bates</u>		DATE: <u>12/14/21</u>	

DEP FORM FD 9000-25 Rapid Periphyton Survey Field Sheet

Site: <u>Spring Creek</u>					County: <u>Volusia</u>		Date: <u>12/14/21</u>		Investigators: <u>Leif Boman, Liz Bates</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	
0	1	3		96	60	1	4		96	
	2	2				2	3			
	3	2				3	2			
	4	2				4	2			
	5	2				5	2			
	6	2				6	2			
	7	2				7	2			
	8	2				8	2			
	9	2				9	2			
10	1	2		96	70	1	3		96	
	2	2				2	3			
	3	2				3	3			
	4	2				4	2			
	5	2				5	2			
	6	2				6	2			
	7	2				7	2			
	8	2				8	2			
	9	2				9	2			
20	1	2		96	80	1	3		96	
	2	2				2	3			
	3	2				3	2			
	4	2				4	2			
	5	2				5	2			
	6	2				6	2			
	7	2				7	2			
	8	2				8	2			
	9	2				9	2			
30	1	2		96	90	1	3		96	
	2	2				2	3			
	3	2				3	2			
	4	2				4	2			
	5	2				5	2			
	6	2				6	2			
	7	2				7	2			
	8	2				8	2			
	9	2				9	2			
40	1	2		96	100	1	3		96	
	2	2				2	3			
	3	2				3	2			
	4	2				4	2			
	5	2				5	2			
	6	2				6	2			
	7	2				7	2			
	8	2				8	2			
	9	2				9	2			
50	1	2		96		1	3			
	2	2				2	3			
	3	2				3	2			
	4	2				4	2			
	5	2				5	2			
	6	2				6	2			
	7	2				7	2			
	8	2				8	2			
	9	2				9	2			

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%.

STORET Station Number: GC80153

Secchi depth	<u>0.5</u>
Estimated?	<u>NO</u>

# points ranked 4-6	<u>4</u>
total points assessed	<u>99</u>
% points ranked 4-6	<u>4%</u>

Check accompanying data collected at same site/date.

Algal mat sample	<u>N/A</u>
Linear Veg Survey	<u>N/A</u>
Habitat Assessment	<u>X</u>
SCI/Biorecon	<u>N/A</u>
Water sample	<u>X</u>

RQ- 2021-11-15-17

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

Contains: Conc. H2SO4
Lot No.: SA1105060
Expires: 04/30/22
See Safety Data Sheet (SDS)

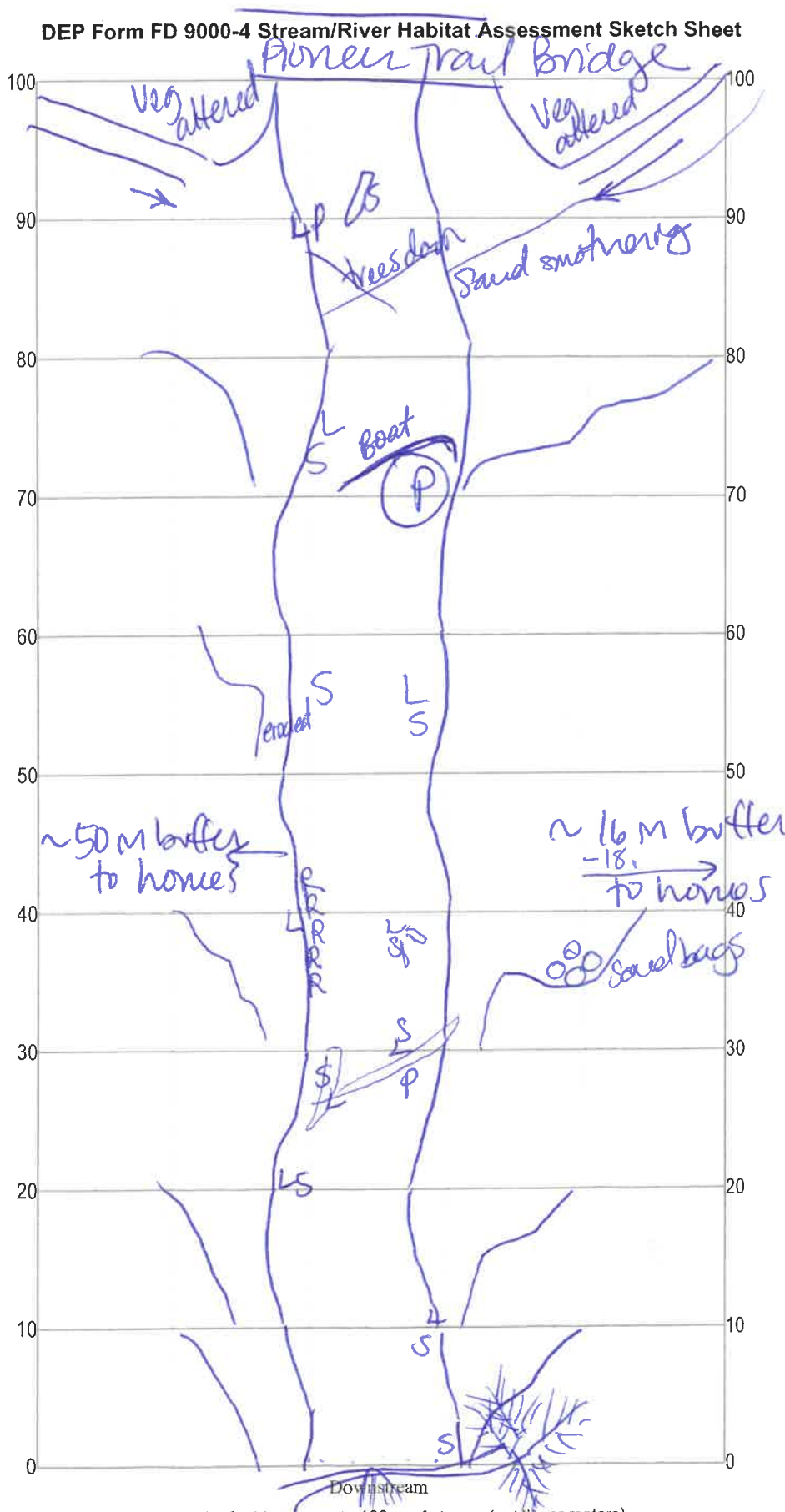
Contains: 1:1 HNO3
Lot No.: NA1105100
Expires: 06/07/22
See Safety Data Sheet (SDS)

Contains: 1:1 HNO3
Lot No.: 772-015
Expires: 06/07/22
See Safety Data Sheet (SDS)

Contains: 1:1 HNO3
Lot No.: 772-015
Expires: 06/07/22
See Safety Data Sheet (SDS)

DEP Form FD 9000-4 Stream/River Habitat Assessment Sketch Sheet

Left Bank



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

Location: Spruce Creek @ Pioneer Trail
Date: 12/14/21
Sampler: Leif Boman, Orabehn Bates

100 m: Latitude 29.05053868
Longitude -81.04663148

0 m: Latitude _____
Longitude _____

Substrates: Code key, draw proportionate habitat abundance. %

☒ S Snags 4.0

☐ Roots/undercut banks _____

☒ L/HP Leaf Packs (or mats) 1.0

☐ Aquatic Macrophytes _____

☐ _____

☐ _____

☒ P Pools total # observed = _____
range expected = _____

Average width 5 m

Average depth 0.3 m

Velocity measured at 40 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:

5 sec/m velocity
5m / VDB in most
tannic

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

Waterbody: Spruce Creek @ Pioneer Trail	Date: 12/14/12	County: Volusia	Storet Number: GSCE0153
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Analyst: <u>W. F. Boman, Elizabeth Bates</u>	Signature: <u>[Signature]</u>
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Comments: less than 2sqm of veg. No LVS done

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]

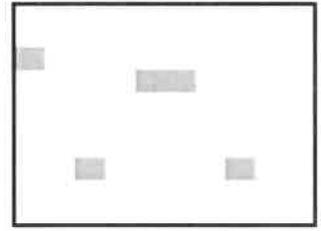
FDEP FORM FD 9000-32 LINEAR VEGETATION SURVEY FIELD SHEET

Percent Cover Categories for macrophytes in a 10 m segment of a stream 5 m wide

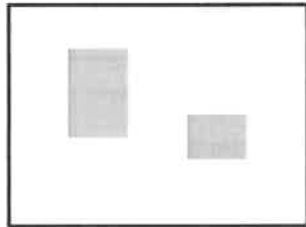
5% Macrophyte Coverage



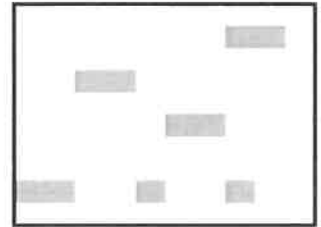
5% Macrophyte Coverage



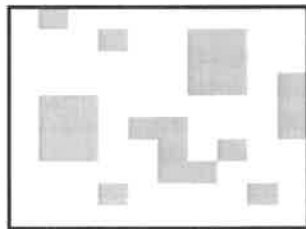
10% Macrophyte Coverage



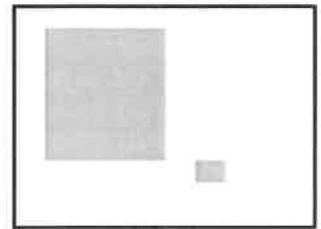
10% Macrophyte Coverage



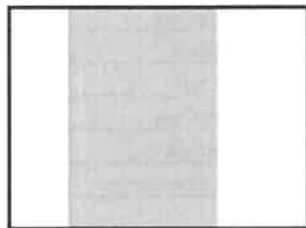
25% Macrophyte Coverage



25% Macrophyte Coverage



50% Macrophyte Coverage



50% Macrophyte Coverage

