FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
STRATEGIC MONITORING PROGRAM FIELD SHEET

June 2016

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Data Qualified? Yes / No

STORET Station Name: Groover Branch @ Airport Rd. Bridge **Date:** 11/16/2016 (mm/dd/yyyy)

STORET Station ID: 27010580 **WBID:** 2635 **Latitude:** 29.27386111 (Decimal Degrees)

County: Volusia **RQ -** 2016-11-07-67 **ORG ID:** 21FLCEN **Longitude:** -81.1281944 (Decimal Degrees)

Receiving Body of Water: Tomoka River **Field ID:** G5CE0040

Sampling Team Members	WQ Measurements	Sample Collection	Documentation	Preservation	Preservation Check
Mike Lingo	✓		✓		
Natalie Ayala		✓		✓	✓

Sampling Equipment

☑ Sample Container ☐ Van Dorn ☐ Pole
☐ Carboy ☐ Syringe
☐ Dipper ☐ Other _____
Equipment ID _____

Collection Method

☑ Wading
☐ From Shore
☐ Other (note below)

Via Boat
☐ Canoe/Kayak
☐ Electric Motor
☐ Gasoline Motor

Water Level: Dry / Low / (Normal) / High / Flooded

Matrix: (Fresh) / Marine / DI

Meter ID# Boop / Non **Photos:** (Yes) / No

Tide Falling: Yes / No / (NA)

Time Zone	Time	Sample Depth (m)	Total Depth (m)	DO (mg/L)	DO (%SAT)	pH	Salinity (ppt)	Secchi Disk (m)	Sp COND (µmhos/cm)	Temp. (C°)
(EST)	1406	0.2	0.3	2.6	27	7.4	0.2	0.3(5)	455	17.8
CEN										

Biological Samples Collected: None HA (SCI) (LVS) (RPS) LVI Other _____

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 ☑ H_2SO_4	6209120	7/27/17	☑ <2
Metals	☐ W-ICPMS ☐ W-ICP	☐ Ice ☐ HNO_2			☐ <2
Filtered Nutrients	☑ W-PO4-F ☑ Field Filtered 0.45 µm Filter	☑ Ice			
Chlorophyll	☑ CHLSUITE-W	☑ Ice			
BOD	☐ BOD-UNIN	☐ Ice			
Physical/Aggregate (Fresh)	☑ Alkalinity / W-F / W-TSS / TURBIDITY / W-Cl-IC / W-COLOR / W-SO4-IC / W-TDS	☑ Ice			
Physical/Aggregate (Marine)	☐ Alkalinity / W-F / W-TSS / TURBIDITY	☐ Ice			
Macroinvertebrates	☑ MI-FW-QLDC	☑ Formalin			
Microbiology	☐ E Coli ☐ F Coli ☐ Entero ☐ QPCR	☐ Ice			
Periphyton	☐ ALGAE-ID	☐ Ice			
Pesticides	☐ W-PSNP-TQ ☐ W-AHERB-AA ☐ W-PYR-AA-R ☐ W-PC-AA-SF ☐ W-UHERB-AA ☐ W-GLYPH	☐ Ice ☐ Other			

Place Preservative Sticker(s) Here (If Available)

Notes: Flow for rivers/streams: 0.1 m/s

Groover Branch @ Airport Rd. Bridge

Date: 11/16/2016
RQ-2016-11-07-67

G5CE0040
Field ID
STORET
27010580

Signature: _____ **Date:** 11/16/16

Field Parameters Entered into LIMS: KMW 11/29/16 (Initials/Date) T.Sheet Updated: ☐ Field Parameters QC in LIMS: _____ (Initials/Date) T.Sheet Updated: ☐

Date Migrated to STORET: _____ (Initials/Date) T.Sheet Updated: ☐ Field Sheets Scanned/Saved: _____ (Initials/Date) T.Sheet Updated: ☐

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

SAMPLE ID 77125 ORG ID 21FLCEN LATITUDE 29.2738611
COUNTY Volusia STORET # 21010580 LONGITUDE -81.1281944
DATE 11/16/16 TIME 1200 SAMPLING AGENCY FDEP CE-ROC
SITE NAME Grocver Branch @ Airport Rd Bridge
FIELD ID/NAME 05CE 0040 RECEIVING BODY OF WATER Tomoka River

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)
60 ✓				40 ✓			

Landscape Development Intensity Index (LDI):

Local Watershed Erosion (select one): ☐ None ☑ Slight ☐ Moderate ☐ Heavy

Local Watershed NPS Pollution: ☐ No evidence ☐ Slight ☑ Moderate ☐ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side
Left Bank: >18 Right Bank: 1

Hydrologic Modification Score (per FT 3101):

High Water Mark: 0.3 (m) + 0.3 (above present water level) = 0.6 (present depth) (above bed)

Artificially Impounded ☐ Yes ☑ No

Typical Width (m) Depth (m)/Velocity (m/sec) Transect
2.2 ~~2.5~~ MKL m wide

m/s	0.1 m/s	m/s
m deep	0.3 m deep	m deep

Artificially Channelized: ☑ No ☐ Some recovery ☐ Mostly recovered, more sinuous ☐ Recent, severe

Canopy Cover % ☐ Open ☐ Lightly Shaded (11-45%) ☐ Heavily Shaded ☑ Moderate Shaded (46-80%)

SEDIMENT / SUBSTRATE

Sediment Type: Sand / Silt

Sediment Oils ☑ Absent ☐ Slight ☐ Moderate ☐ Profuse

Sediment Odors ☑ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ Other (Specify):

Smothering of Substrates

	None	Slight	Moderate	Severe
Sand Smothering:	☐	☑	☐	☐
Silt Smothering:	☐	☐	☑	☐
Algae Smothering:	☑	☐	☐	☐

SUBSTRATE TYPE
Assessment Tool: ☑ SCI ☑ RPS ☑ LVS (2 m²) ☐ LCI ☐ BioRecon

	% Coverage	INVERT # Times Sampled	PERI # Times Sampled
Woody Debris (Snags)	1	5	
Undercut Banks / Roots	1	5	
Leaf Packs or Mat	1	5	
Aquatic Vegetation			
Rock or Shell Rubble		1	
Sand		4	
Mud / Muck / Silt			
Other			
Other			

WATER QUALITY

	Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	D.O. Sat (%)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top:	0.2	17.8	7.4	2.6	27	455	0.2	0.3 (S) ☑ VOB
Mid:								
Bottom								TOTAL DEPTH 0.3

Meter ID: Boap / Non

Water Odors Normal ☑ Petroleum ☐ Sewage ☐ Chemical ☐ Other ☐

Water Surface Oils Normal ☑ Sheen ☐ Globs ☐ Slick ☐ Other ☐

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 ☐

ABUNDANCE

	Not Obs.	Rare	Common	Abundant
Periphyton:	☐	☑	☐	☐
Fish:	☐	☑	☐	☐
Aquatic Plants:	☐	☑	☐	☐
Iron/Sulfur Bacteria:	☑	☐	☐	☐

System Type: Stream ☑ Lake ☐ Wetland ☐ Estuary ☐ Other(Specify) ☐

AMBIENT FIELD CONDITIONS / NOTES:
Lot of downed trees from Hurrican Mathew

☑ The antecedent hydrologic conditions have been met to my best knowledge.

SAMPLING TEAM Mike Linger, Natalie Ayala

SIGNATURE: [signature] DATE: 11/16/16

Revision Date: September 19, 2012

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

SAMPLING AGENCY:		STORET STATION NUMBER:	DATE (MM/DD/YY):	RECEIVING BODY OF WATER:
FDEP CE-ROC		27010580	11/16/16	Tomoka River
REMARKS:	COUNTY: Volusia	LOCATION: Groover Branch @ Airport Rd Bridge		FIELD ID/NAME: G5CE0040

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** 11	Four or more major productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock] 20 19 18 17 16	Three major productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags) 15 14 13 12 (11)	Two major productive habitats present. Less than desirable habitat, frequently disturbed or removed 10 9 8 7 6	One or less major productive habitat. Lack of habitat is obvious, substrates unstable or smothered 5 4 3 2 1
Substrate Availability 3	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 10	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 12 Primary Score 36	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 **Artificial Channelization** 19	Expected sinuosity given the stream width. No evidence of dredging or artificial straightening. No spoil banks. 20 19 18 17 16	Good sinuosity within old channelized area. Evidence of dredging in the past (>25 yrs) but mostly recovered. 15 14 13 12 11	Straightened with trapezoidal cross section, but has a small degree of sinuosity developed within channelized area. 10 9 8 7 6	Straightened or engineered by dredging, has trapezoidal or box cut cross section, lacks required pools. May have spoil banks. 5 4 3 2 1
Bank Stability Right Bank 5 Left Bank 5	Bankfull > 60% of bank height. Slope of bank ≤ 60° from bankful 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 1 Left Bank 10	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 3 Left Bank 9 Secondary Score 52	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

88 **TOTAL SCORE**

Date:	Analyst:	Signature:
11/16/16	Natalie Ayala	

DEP FORM FD 9000-25 Rapid Periphyton Survey Field Sheet

Site: Groover Branch @ Airport Rd Bridge | County: Volusia | Date: 11/16/16 | Investigators: Mike Linzer

STORET Station Number: 27010580

Transect (m)	Point 1=right 9=left	Algal Thickness Rank (N-6, X)	Estimated	Canopy Cover
0	1	N	N	
	2	N		
	3	N		
	4	N		
	5	N		76
	6	N		
	7	N		
	8	N		
	9	N		
10	1	N		
	2	N		
	3	N		
	4	N		
	5	N		68
	6	N		
	7	N		
	8	N		
	9	N		
20	1	N		
	2	N		
	3	N		
	4	N		
	5	N		72
	6	N		
	7	N		
	8	N		
	9	N		
30	1	N		
	2	N		
	3	N		
	4	N		
	5	N		64
	6	N		
	7	N		
	8	N		
	9	N		
40	1	N		
	2	N		
	3	N		
	4	N		
	5	N		76
	6	N		
	7	N		
	8	N		
	9	N		
50	1	N		
	2	N		
	3	N		
	4	N		
	5	N		76
	6	N		
	7	N		
	8	N		
	9	N	N	

Transect (m)	Point 1=right 9=left	Algal Thickness Rank (N-6, X)	Estimated	Canopy Cover
60	1	N	N	
	2	N		
	3	N		
	4	N		
	5	N		72
	6	N		
	7	N		
	8	3		
	9	3		
70	1	N		
	2	N		
	3	N		
	4	N		
	5	N		64
	6	N		
	7	N		
	8	N		
	9	N		
80	1	N		
	2	3		
	3	N		
	4	N		
	5	N		60
	6	N		
	7	N		
	8	N		
	9	3		
90	1	N		
	2	N		
	3	N		
	4	N		
	5	N		68
	6	N		
	7	N		
	8	N		
	9	N		
100	1	3		
	2	N		
	3	N		
	4	N		
	5	N		60
	6	N		
	7	N		
	8	N		
	9	3	N	

Secchi depth	0.3 (s)
Estimated?	

# points ranked 4-6	0
total points assessed	99
% points ranked 4-6	

Check accompanying data collected at same site/date.	
Algal mat sample	
Linear Veg Survey	
Habitat Assessment	✓
SCI/Biorecon	✓
Water sample	✓

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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

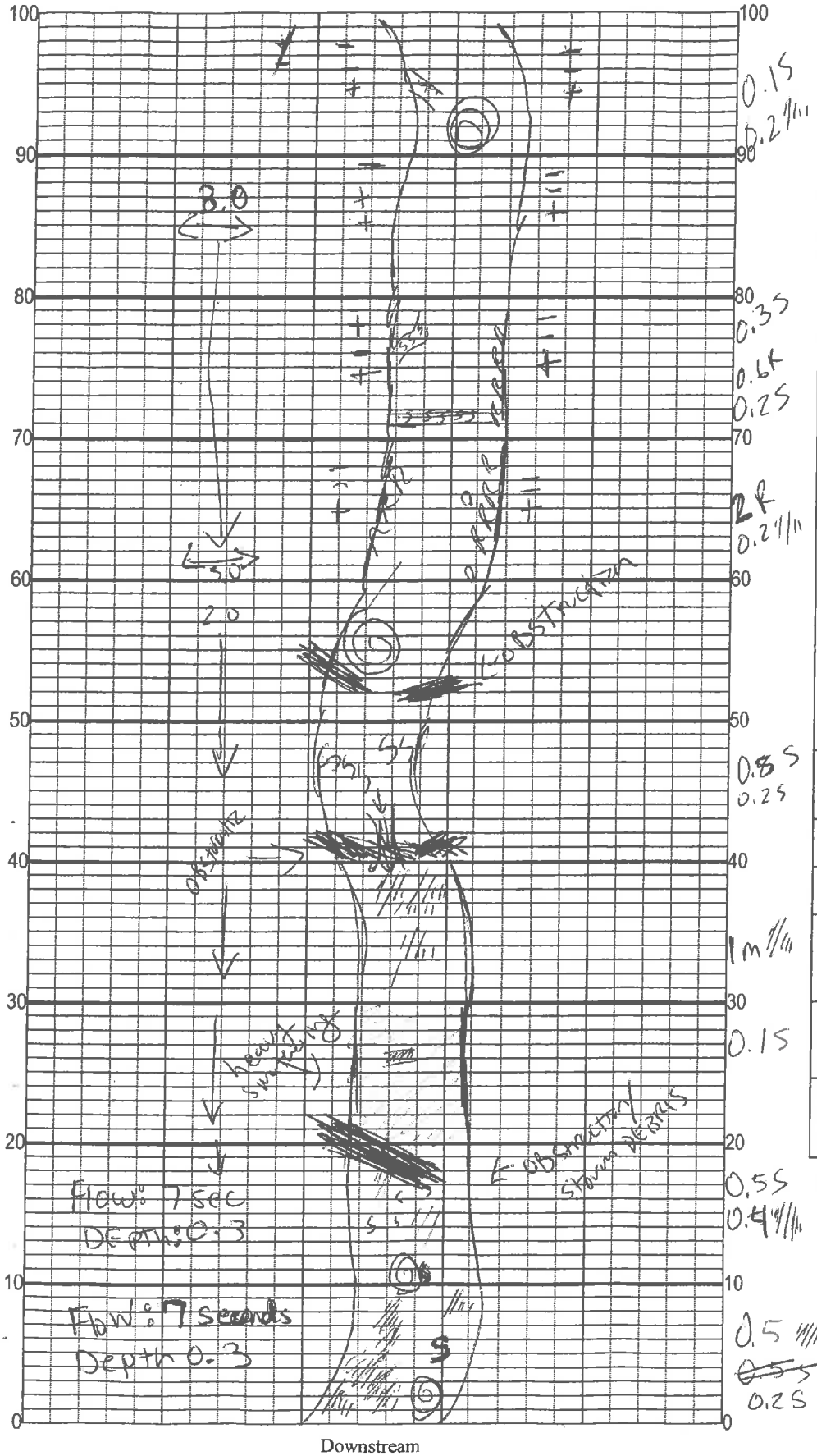
Record "N" and check "Estimated" for points deeper than the Secchi depth; algae are presumed absent. Check "Estimated" if thickness estimated for deep points which can be seen but not reached.

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 9000-4 Stream/River Habitat Assessment Sketch Sheet



Location: Groover Branch

Date: 11/16/16

Sampler: Mike Linger, Natalie Ayo

100 m:	Latitude	29.2738611
	Longitude	-81.1281544
0 m:	Latitude	29.273036
	Longitude	-81.127686

Substrates: Code key, draw proportionate habitat abundance.

		%
S	Snags 2.4	1
R	Roots/undercut banks 2.6	1
///	Leaf Packs (or mats) 2.3 m²	~~2.3~~ 1
	Aquatic Macrophytes	
P	Pools	total # observed = 4
		# range expected = 4-8

Average width 2.5 m

Average depth 0.3 m

Velocity measured at 10 & 20 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:

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

2.3/220 =

≈ 220 m²

Form FD 9000-32 **FDEP Linear Stream Vegetation Survey (DEP SOP FS 7320)** Revised 6/12/12

Waterbody: Groover Branch @ Airport Rd. Bridge | Date: 8/16/16 | County: Volusia | Storet Number: 27010580

Analyst: Mike Linger, Natalie Ayala | Signature:

Comments: no LVS performed, <2m² of vegetation

Instructions: Note taxa growing in the water with a checkmark if present, "D" if dominant, and "C" if codominant (dominance only if 1 m^2 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 0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	Specimen collected (check)
Alternanthera philoxeroides											
Bacopa caroliniana											
Bacopa monneri											
Bidens mitis											
Boehmeria cylindrica											
Centella asiatica											
Cephalanthus occidentalis											
Ceratophyllum demersum											
Chara											
Cicuta maculata											
Cladium jamaicense											
Colocasia esculenta											
Crinum americanum											
Diodia virginiana											
Eichhornia crassipes											
Eleocharis (wispy viviparous)											
Hydrilla verticillata											
Hydrocotle											
Hygrophila polysperma											
Hymenocallis											
Itea virginica											
Lachnanthes caroliniana											
Landoltia punctata											
Lemna											
Limnophila sessiflora											
Ludwigia leptocarpa											
Ludwigia palustris											
Ludwigia peruviana											
Ludwigia repens											
Luziola fluitans											
If no Dominant or Co-Dominant were selected, indicate with an "X"											
Indicate % cover macrophytes per section											
0-5% Macrophyte Coverage											
>5 and ≤10% Macrophyte Coverage											
>10 and ≤25% Macrophyte Coverage											
>25 and ≤50% Macrophyte Coverage											
> 50% Macrophyte Coverage											

HERBACEOUS SPECIES	Meter Mark 0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	Specimen collected (check)
Micranthemum glomeratum											
Micranthemum umbrosum											
Myriophyllum aquaticum											
Najas guadelupensis											
Nuphar luteum											
Orontium aquaticum											
Panicum hemitomon											
Panicum repens											
Panicum rigidulum											
Pistia stratioides											
Polygonum glabra											
Polygonum hydropiperoides											
Polygonum punctatum											
Pontedaria cordata											
Potamogeton illinoensis											
Ruellia simplex											
Sacciolepis striata											
Sagittaria kurziana											
Sagittaria lancifolia											
Sagittaria latifolia											
Salix caroliniana											
Salvinia minima											
Samolus parviflora											
Saururus cernuus											
Typha											
Vallisneria americana											
Zizania aquatica											