



REF LVI

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION STRATEGIC MONITORING PROGRAM FIELD SHEET

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February 2016

Data Qualified?
Yes / No

STORET Station Name: Bear Lake @ Center

Date: 9/21/16
(mm/dd/yyyy)

STORET Station ID: 20020159

Latitude: 28.45220834
(Decimal Degrees)

WBID: 2884 A RQ- 2016-09-19-41

ORG ID: 2IFLCEN

Longitude: -81.74974721
(Decimal Degrees)

Receiving Body of Water:

Field ID: G1CE0002

County: Lake

Sampling Team Members					WQ Measurements	Sample Collection	Documentation	Preservation	Preservation Check
Natalie Ayala					X	X			
Ben Parwater						X	X	X	

Sampling Equipment		
☒ Sample Container	☐ Van Dorn	☐ Pole
☐ Carboy	☐ Syringe	
☐ Dipper	☐ Other	
Equipment ID		
Collection Method		
☐ Wading	☒ Via Boat	
☐ From Shore	☒ Canoe/Kayak	
☐ Other (note below)	☐ Electric Motor	
	☐ Gasoline Motor	

Water Level: Dry / Low / Normal / <u>High</u> / Flooded										
Meter ID# <u>Betty 67</u>		Photos: Yes / No		Matrix: Fresh / Marine / DI						
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	1400	0.3	2.8	6.9	96	4.7	0.03	0.4	69	32.9
CEN		2.3		0.4	5.0	4.6	0.03		70	27.8

Biological Samples Collected: None HA SCI LVS RPS <u>LV</u> 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 ☒ H2SO4			☒ <2	
Metals	☒ W-ICPMS ☒ W-ICP					☒ Ice ☒ HNO3			☒ <2	
Filtered Nutrients	☐ W-PO4-F ☐ Field Filtered 0.45 µm Filter					☐ Ice				
Chlorophyll	☒ CHLSUITE-W					☒ Ice				
BOD	☐ BOD-UNIN					☐ Ice				
Physical/Aggregate (Kit A/C)	☒ Alkalinity / ☒ W-F / ☒ W-TSS / ☒ TURBIDITY / ☒ W-CI-IC / ☒ W-COLOR / ☒ W-SO4-IC / ☒ W-TDS					☐ Ice				
Physical/Aggregate (Kit B/D)	☐ Alkalinity / ☐ W-F / ☐ W-TSS / ☐ TURBIDITY					☐ Ice				
Macroinvertebrates	☐ MI-FW-QLDC					☐ Formalin				
Microbiology	☐ E Coli ☐ F Coli ☐ Entero ☐ QPCR					☐ Ice				
Periphyton	☐ ALGAE-JD					☐ Ice				
Pesticides	☐ W-PSNP-TQ ☐ W-AHERB-AA ☐ W-PYR-AA-R ☐ W-PC-AA-SF ☐ W-UHERB-AA ☐ W-GLYPH					☐ Ice ☐ Other				
	☒ OTY-QN-C ☒ PKD-QN-C					☒ ICE				

Notes: <u>REF LVI</u>	Bear Lake @ Center G1CE0002 Field ID <u>↑</u> STORET <u>↓</u> Date: <u>09/21/2016</u> RQ-2016-09-19-41 20020159
Signature: <u>[Signature]</u>	Date: <u>9/21/16</u>

Field Parameters Entered into LIMS: NA (Initials/Date) Field Parameters QC in LIMS: NA (Initials/Date)

Date Migrated to STORET: NA (Initials/Date) Field Sheets Scanned/Saved: NA (Initials/Date)

DEP FORM FD 9000-31: LAKE OBSERVATION FIELD SHEET

SAMPLE ID: 78067 MACROPHYTE ID: _____ LATITUDE: 28.45220834
COUNTY: Lake STORET #: 20020159 LONGITUDE: -81.74974721
DATE: 09/21/16 TIME: _____ SAMPLING AGENCY: FDGP-CENTRAL
SITE NAME: Bear Lake WBID: 2864A
FIELD ID/NAME: 2016 GLC 0002 LAKE SIZE: _____ RQ: 2016-09-1941

WATERSHED / LAKESIDE FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category – from GIS) : Forest/Natural ☒ 100 Silviculture ☐ Field/Pasture ☐ Agricultural ☐ Residential ☐ Commercial ☐ Industrial ☐ Other (Specify) ☐				LANDSCAPE DEVELOPMENT INTENSITY (100 m buffer) LDI:	
Local Watershed Erosion (select one) : ☒ None ☐ Slight ☐ Moderate ☐ Heavy				Artificially Impounded ☐ Yes ☐ No	
Local Watershed NPS Pollution : ☒ No evidence ☐ Slight ☐ Moderate ☐ Heavy				Land Use Source & Year:	
STORMWATER INPUTS <u>20</u>	Stormwater enters system via sheet flow over non-cultivated and/or natural vegetation 20 19 18 17 16	Some direct stormwater inputs (ditches, pipes, cultivated vegetation < 10%) but good BMPs in place 15 14 13 12 11	Moderate direct inputs of stormwater (ditches, pipes, cultivated vegetation 11%-50%) but few BMPs in place 10 9 8 7 6	Much direct input of stormwater (ditches, pipes, cultivated vegetation > 51%) and no or ineffective BMPs in place 5 4 3 2 1	
LAKESIDE ALTERATIONS <u>20</u>	Very few man-made structures, roads, or other disturbance adjacent to lake (<10% lakeside affected) 20 19 18 17 16	Moderate disturbance visible - structures, roads or other (10%-49% lakeside affected) 15 14 13 12 11	Many structures, roads or other human disturbance visible (50%-70% lakeside affected) 10 9 8 7 6	Highly developed or disturbed (>70% of lakeside affected) 5 4 3 2 1	
BUFFER ZONE <u>20</u>	Expected native vegetation between uplands and littoral zone, greater than 90% of shore with >18 m buffer 20 19 18 17 16	89%-51% of shoreline with >18m buffer or >75% with 10m to 18m buffer 15 14 13 12 11	50%-30% of shoreline with >18m buffer or 50%-74% with 10m to 18m buffer 10 9 8 7 6	< 29% of shoreline with >18m buffer 5 4 3 2 1	

WATER / SUBSTRATE / BIOLOGICAL: SAMPLES AND OBSERVATIONS

Water: Nutrient Sample Taken? ☒ Yes ☐ No Preserved? ☒ Yes ☐ No pH < 2 ☒ Yes ☐ No Color Sample Taken? ☒ Yes ☐ No Lot # _____ Exp. Date: _____ Alkalinity Sample Taken? ☒ Yes ☐ No Water Level ☐ Low ☒ Normal ☐ High		Water Odors: ☒ Normal ☐ Sewage ☐ Petroleum ☐ Other _____	
Meter Readings: Top: Depth (M) <u>0.3</u> Temp. (°C) <u>32.9</u> pH (SU) <u>4.7</u> D.O. (MG/L) <u>6.9</u> D.O. Sat. (%) <u>96</u> Cond. (UMHO/CM) <u>69</u> Salinity (PPT) <u>0.03</u> Mid-Depth: _____ Bottom: <u>2.3</u> <u>22.8</u> <u>4.6</u> <u>0.4</u> <u>5.0</u> <u>70</u> <u>0.03</u>		Water Surface Oils: ☒ None ☐ Sheen/Slick ☐ Glob ☐ Other _____	
Sediment Type: (may check more than one) ☐ Sandy ☐ Organic fibrous (peaty, CPOM) ☐ Vegetated ☐ Sand/Silt ☐ Organic smooth (muck) ☐ Other (Specify): _____		Clarity: ☒ Clear ☐ Opaque ☐ Turbid ☐ Slightly Turbid Color: ☒ Tannic ☐ Clear ☐ Green	
Biological Communities: LVI Conducted? ☒ Yes ☐ No Phytoplankton Sample Taken? ☒ Yes ☐ No Sample Preserved? ☐ Yes ☒ No Lot #: _____ Exp Date: _____ Algal Bloom/Algal ID Sample Taken? Yes ☒ No ☐ Don't Know Active Vegetation Mgmt? ☐ Yes ☒ No ☐ Don't Know		SECCHI (M) <u>0.4</u> Total Station Depth (M) <u>2.8</u> VOB ☐	
Abundance: Absent Rare Common Abundant Periphyton ☒ ☐ ☐ ☐ Nuisance Plants ☐ ☐ ☒ ☐ Submersed Plants ☐ ☒ ☐ ☐ Exotic Apple Snails ☒ ☐ ☐ ☐		Sediment Odors: ☐ Normal ☐ Other (Specify): _____ ☐ Anaerobic	
Weather Conditions :		Additional Notes: Ranger discussed plans to remove Scirpus from lake.	
SAMPLING TEAM: <u>Natalie Ayala, Ben Parwater</u>		SIGNATURE: <u>[Signature]</u> DATE: <u>9/21/16</u>	

DEP FORM FD 9000-27 LAKE VEGETATION INDEX FIELD SHEET

Waterbody: <u>Bear Lake</u>					County: <u>Lake</u>					Date: <u>9/21/2016</u>				
Analyst: <u>Natalie Ayala</u>					Signature: <u>Natalie Ayala</u>					STORET: <u>20020159</u>				
Except where noted as "sp." species level identification required. *Genera that may require lab verification* Plants in bold= FLEPPC invasive exotic. It is important to note dominant or co-dominant taxa (by areal extent) for each unit. Use "D" to denote dominant taxon, or "C" for the 2 co-dominant taxa.										Lake units sampled (circle one group): 1, 4, 7, 10 2, 5, 8, 11 <u>3, 6, 9, 12</u>				
SPECIES	3	6	9	12	Collected? (✓)	SPECIES	3	6	9	12	Collected? (✓)			
Acer rubrum						Fraxinus								
Alternanthera philoxeroides						Fuirena scirpoides breviseta	✓							
Amaranthus australis						Gordonia lasianthus								
Andropogon sp.						Habenaria repens								
Azolla filiculoides (A. caroliniana)						Hibiscus coccineus								
Baccharis sp.						Hibiscus grandiflora								
Bacopa caroliniana						Hydrilla verticillata								
Bacopa monnieri						Hydrocotyle sp.								
Bidens alba						Hygrophila polysperma								
Bidens laevis						Hymenocallis sp.								
Bidens mitis		✓				*Hypericum fasciculatum								
Blechnum serrulatum		✓				*Hypericum hypericoides								
Boehmeria cylindrica						*Hypericum myrtifolium								
Brasenia schreberi						Ilex cassine	✓	✓	✓	✓				
Cabomba caroliniana						Ipomoea aquatica								
Canna						Ipomoea sagittata								
Centella asiatica						Itea virginica								
Cephalanthus occidentalis	✓	✓	✓	✓		Juncus effusus								
Ceratophyllum demersum						*Juncus marginatus								
Chara sp.						*Juncus megacephalus								
Cicuta maculata						Juncus repens								
Cinnamomum camphora						*Juncus scirpoides								
Cladium jamaicense	✓	✓	✓	✓		Lachnanthes caroliniana	✓	✓	✓	✓				
Colocasia esculenta						Leersia hexandra								
*Commelina						Landoltia punctata (Spirodela punctata)								
Crinum americanum						Lemna sp.								
*Cyperus alternifolius (C. involucratus)						Leucothoe racemosa (Eubotrys racemosa)								
Cyperus articulatus						Limnium spongia								
Cyperus haspan						Limnophila sessiliflora								
*Cyperus lecontei						Liquidambar styraciflua								
*Cyperus polystachyos						*Ludwigia arcuata	✓			✓				
*Cyperus odoratus						*Ludwigia grandiflora								
*Cyperus surinamensis						*Ludwigia hexapetala								
Cyrilla racemiflora						*Ludwigia leptocarpa	✓		✓	✓				
Decodon verticillatus						Ludwigia (native)								
Diodia virginiana						*Ludwigia octovalvis								
*Echinochloa crus-galli						*Ludwigia peruviana	✓	✓	✓	✓				
*Echinochloa muricatum						*Ludwigia repens								
Echinochloa walteri						Ludwigia suffruticosa				✓				
Eclipta prostrata (E. alba)						Luziola fluitans (Hydrochloa carolinensis)								
Eichhornia crassipes						Magnolia virginiana			✓	✓				
*Eleocharis						Mayaca fluviatilis								
Eleocharis cellulosa						Melaleuca quinquenervia								
*Eleocharis elongata						Micranthemum glomeratum								
Eleocharis equisetoides						Micranthemum umbrosum								
Eleocharis interstincta						Mikania scandens								
Eleocharis submersa viviparous						Mimosa pigra								
*Eriocaulon compressum						Myrica cerifera	✓	✓	✓	✓				
*Eriocaulon decangulare														
Eupatorium capillifolium		✓												

FORM FD 9000-27: LAKE VEGETATION INDEX FIELD SHEET

Site: <u>Bear Lake</u>						Date: <u>9/21/16</u>					
SPECIES	3	6	9	12	Collected? (✓)	SPECIES	3	6	9	12	Collected? (✓)
Myriophyllum aquaticum						<i>Salix caroliniana</i>					
* <i>Myriophyllum heterophyllum</i>						Salvinia minima					
* <i>Myriophyllum laxum</i>						<i>Sambucus canadensis</i>					
* <i>Myriophyllum pinnatum</i>						Sapium sebiferum					
Myriophyllum spicatum						<i>Saururus cernuus</i>					
* <i>Najas filifolia</i>						Schinus terebinthifolius					
* <i>Najas guadalupensis</i>						* <i>Schoenoplectus californicus</i>					✓
* <i>Najas minor</i>						* <i>Schoenoplectus pungens</i>					
<i>Nelumbo lutea</i>						* <i>Schoenoplectus tabernaemontani</i> (<i>Scirpus validus</i>)					
<i>Nitella</i> spp.						<i>Scirpus cubensis</i> (<i>Oxycaryon cubense</i>)	✓	D	C	C	
<i>Nuphar</i> sp.	D	✓	✓	✓		<i>Scirpus cyperinus</i>					
<i>Nymphaea mexicana</i>						* <i>Sesbania</i>					
<i>Nymphaea odorata</i>	✓			✓		<i>Solidago</i> sp.					
<i>Nymphoides aquatica</i>						<i>Sparganium americanum</i>					
<i>Nyssa sylvatica</i> var. <i>biflora</i>	✓	✓				<i>Spartina bakeri</i>					
<i>Orontium aquaticum</i>						<i>Spirodela polyrhiza</i>					
<i>Osmunda cinnamomea</i>	✓	✓	✓	✓	PT NA	<i>Taxodium</i> sp.	✓	✓	✓	✓	
<i>Osmunda regalis</i>	✓	✓	✓	✓	SE NA	<i>Thalia geniculata</i>					
<i>Panicum hemitomon</i>		✓				<i>Thelypteris interrupta</i>					
Panicum repens						<i>Thelypteris palustris</i>					
<i>Paspalidium geminatum</i>						<i>Triadenum virginicum</i>					
* <i>Paspalum repens</i>						<i>Typha</i> sp.	✓		✓	✓	
<i>Paspalum urvillei</i>						Urochloa mutica (<i>Brachiaria mutica</i>)					
<i>Peltandra</i> sp.						* <i>Utricularia gibba</i> (<i>U. biflora</i>)	✓	✓	✓	✓	
<i>Persea</i> sp.						* <i>Utricularia foliosa</i>					
Pennisetum purpureum						* <i>Utricularia inflata</i>					
<i>Phragmites australis</i>						* <i>Utricularia purpurea</i>					
<i>Pinus elliotii</i>						* <i>Utricularia radiata</i>					
Pistia stratioides						* <i>Utricularia resupinata</i>					
<i>Pluchea</i> sp.						<i>Vallisneria americana</i>					
* <i>Polygonum glabrum</i> (<i>densiflorum</i>)						<i>Vitis</i> sp.					
<i>Polygonum hirsutum</i>						* <i>Websteria confervoides</i>					
* <i>Polygonum hydropiperoides</i>						Wedelia trilobata (<i>Sphagneticola trilobata</i>)					
* <i>Polygonum punctatum</i>						<i>Wolffiella</i> spp.					
* <i>Polygonum</i>						<i>Woodwardia virginica</i>					
<i>Pontederia cordata</i>	✓	✓	✓	C		<i>Xyris</i> sp.	✓	✓	✓	✓	
* <i>Potamogeton diversifolius</i>						<i>Zizania aquatica</i>					
* <i>Potamogeton illinoensis</i>						<i>Zizaniopsis milacea</i>					
* <i>Potamogeton pusillus</i>						<i>Ludwigia linearis</i>	✓			✓	
* <i>Potamogeton pectinatus</i> (<i>Stuckenia pectinatus</i>)											
<i>Proserpinaca pectinata</i>											
* <i>Rhexia</i>											
* <i>Rhynchospora comiculata</i>											
* <i>Rhynchospora inundata</i>											
<i>Rhynchospora nitens</i>											
<i>Ricciocarpus natans</i>											
<i>Sabal palmetto</i>											
<i>Sacciolepis striata</i>	✓	✓	C	✓							
* <i>Sagittaria filiformis</i>											
* <i>Sagittaria graminea</i>											
* <i>Sagittaria isoetiformis</i>											
<i>Sagittaria lancifolia</i>	✓	✓	✓								
<i>Sagittaria latifolia</i>											

DEP Form FD 9000-6: Lake Habitat Assessment Field Sheet

STORET STATION NUMBER: 20020159	DATE (M/D/Y) 9/21/16	LAKE NAME Bear Lake		FIELD ID / NAME:		
ECO-REGION:	COUNTY: Lake	SAMPLING LOCATION/DESCRIPTION: Bear Lake		LAKE SIZE:		
PARAMETER	No surface inflow or outflow present, very long water residence time, groundwater seepage dominates	Surface water inflow present, but flow is rare, moderate to long water residence time		Surface water inflow and outflow present (or outflow only), sometimes with visible flow, short water residence time		
HYDROLOGY	☐	☒		☐		
Color	Very clear, uncolored water (benthic sampling appropriate) ☐	Water somewhat tannin stained (benthic sampling appropriate) ☐		Dark, discolored water (water color 20 PCU or higher) ☒		
	Optimal	Suboptimal		Marginal		
Secchi	Secchi > 3 m	Secchi (m)		Poor		
☐ 4	Or VOB	20	19	18	17	16
		15	14	13	12	11
		10	9	8	7	6
		5	4	3	2	1
Vegetation Quality	Diverse, expected native vegetation (emergent or submersed), less than 5% nuisance taxa	Mostly expected native plants, but moderate growths (6%-20% of lake) of nuisance macrophytes, or more than 50% of lake covered with plants		Large masses (21%-40%) of nuisance macrophytes (e.g., Hydrilla, hyacinth, cattail, etc.) or algal mats		
☐ 15						
	20	19	18	17	16	
		15	14	13	12	11
		10	9	8	7	6
		5	4	3	2	1
Stormwater Inputs	Stormwater enters system via sheet flow over non-cultivated and/or natural vegetation	Some direct stormwater inputs (ditches, pipes, cultivated vegetation < 10%) but good BMPs in place		Moderate direct inputs of stormwater (ditches, pipes, cultivated vegetation 11%-50%) but few BMPs in place		
☐ 20						
	20	19	18	17	16	
		15	14	13	12	11
		10	9	8	7	6
		5	4	3	2	1
Bottom Substrate Quality	Diverse mixture of sand, detritus, with small amounts of CPOM/mud/muck. SAV may be present	Mixture of sand or clay and detritus with higher % CPOM/mud/muck content. SAV may be present		Moderate layer of CPOM/ mud/muck, or hardpacked sand only, or moderate algal growth (mats or Chara) on bottom		
☐ 12						
	20	19	18	17	16	
		15	14	13	12	11
		10	9	8	7	6
		5	4	3	2	1
Lakeside Adverse Human Alterations	Very few man-made structures, roads, or other disturbance adjacent to lake (<10%)	Moderate disturbance visible (structures, roads or other), 10%-49% lakeside affected		Many structures, roads or other human disturbance visible (50%-70%) lakeside affected		
☐ 20						
	20	19	18	17	16	
		15	14	13	12	11
		10	9	8	7	6
		5	4	3	2	1
Upland Buffer Zone	Expected native vegetation between uplands and littoral zone, greater than 90% of shore with >18 m buffer	89%-51% of shoreline with >18m buffer or >75% with 10m to 18m buffer		50%-30% of shoreline with >18m buffer or 50%-74% with 10m to 18m buffer		
☐ 20						
	20	19	18	17	16	
		15	14	13	12	11
		10	9	8	7	6
		5	4	3	2	1
Adverse Watershed Land Use	Score the potential effects from adverse human land uses, based on a continuum of amount and type, with least to most adverse as follows: Native vegetation, Silviculture, Pasture or Citrus, Low Density Residential, Row Crops, Commercial, High Density Residential, Urban, Industrial					
☐ 20						
	20	19	18	17	16	
		15	14	13	12	11
		10	9	8	7	6
		5	4	3	2	1
TOTAL SCORE	111					
COMMENTS:						
ANALYSIS DATE:	9/21/16		ANALYST:	Ben Paswater		SIGNATURE: