Sirena Spring #1
Sampled 2013-2014

Site Information

Sirena Spring #1 emerges from the west side of Sulphur Island in Seminole State Forest. The spring was only recently discovered and charted in 2012, and flow has not been measured. Water flows from multiple sand boils into a shallow, wetland-like run that is not clearly defined. Water from the spring eventually discharges into the headwaters of Sulphur Run. The spring pool is small with a soft bottom covered by organic material and sulphur reducing bacteria. The riparian zone is very swamp-like and consists of a normal, expected community of native plants, trees, and shrubs, with no evidence of human disturbance.

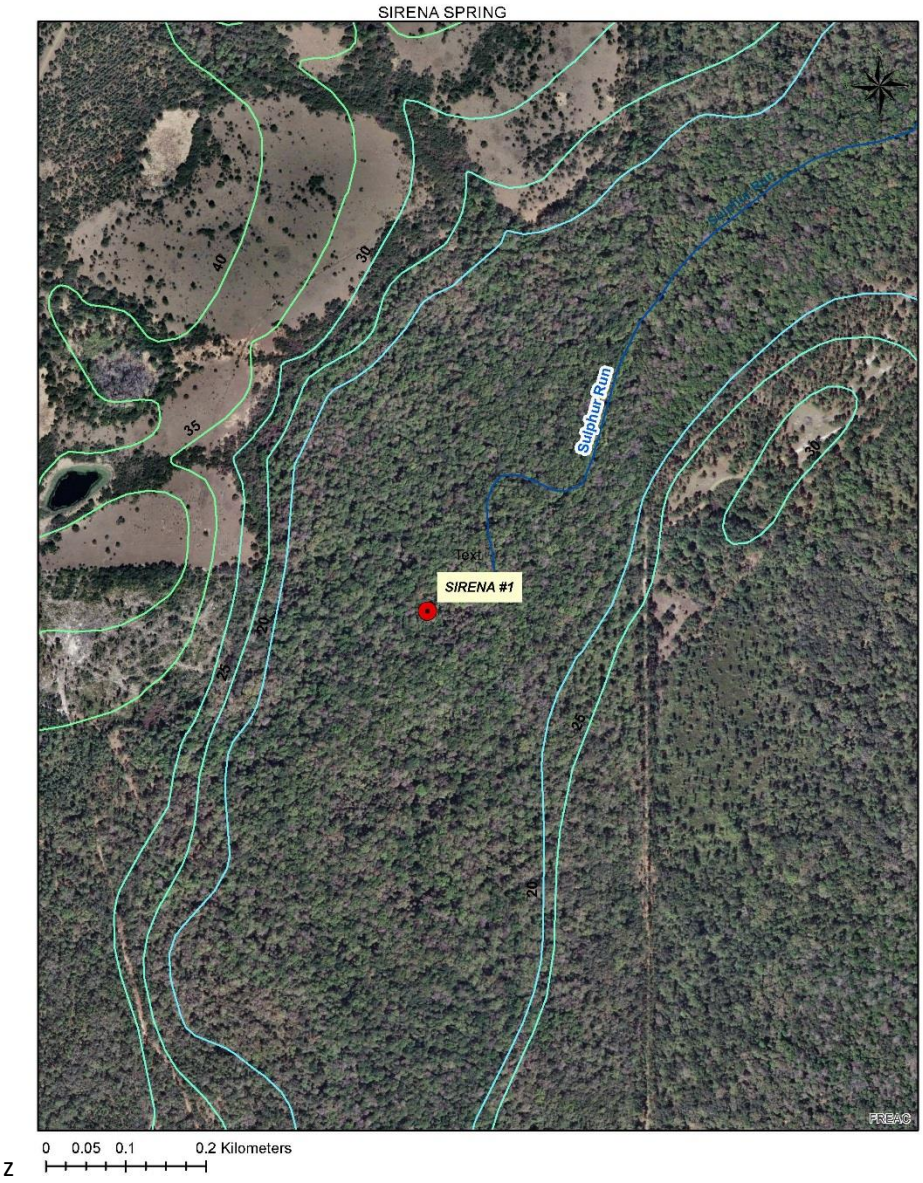

Figure 1-Si. Location of Sirena Spring #1 in State Forest in Seminole County

(A)

(B)

Figure 2-Si. Sirena Spring #1 Pool (A) and Boil/Sample Location (B)

Results

Water Quality

Water quality was fairly constant throughout all four sampling events (Table 1-BA) and suggest that human activities have minimal impact on water source of the spring. The dissolved oxygen (DO) results were low, but that is a natural condition for ground water. Sucralose was not detected and boron results were low. Nutrients results were low including nitrate/nitrite (NO_{3+2}) which were none detect during three sampling events. There are only three NO_{3+2} results. Due to sample contamination, the January 15 sample result was not valid. Even though there is not sufficient data to calculate NO_{3+2} annual geometric mean for Sirena Spring, the three sample results indicate that NO_{3+2} limit is well within the surface water criteria rule 62-302.531(2)(b)2 which states: "For spring vents, the applicable numeric interpretation of the narrative nutrient criterion …is 0.35 mg/L of nitrate-nitrite as an annual geometric mean, not to be exceeded more than once in any three calendar year period."

Table 1-Si. Water Quality Results for Sirena Spring

Date Sampled	7/17/2013	10/8/2013	1/15/2014	4/15/2014
pH	7.44	7.69	7.4	7.34
DO mg/L	0.95	0.84	2.35	0.51
DO %	11	9.7	24.8	5.9
Specific Conductance (µmhos/cm)	595	616	593	592
Water temperature (°C)	22.1	22.18	21.72	22
Fecal Coliform (cfu/100mL)	3 B	2 U	80	2 U
Enterococci (cfu/100mL)	n/a	12 B	n/a	n/a
Turbidity (NTU)	0.6	0.55	1	2.6 A
Alkalinity (mg CaCO3/L)	172	165	180	174
Chloride (mg Cl/L)	20	19	18	18
Color true (PCU)	4.6 I	6.2	4.6 I	3.8 I
Fluoride (mg/L)	0.2	0.23	0.21	0.22
Sulfate (mg SO4/L)	120	110	110	100

TDS (mg/L)	393 A	393	339	373
TSS (mg/L)	2 I	2 U	2 I	2 I
Ammonia (mg N/L)	0.29	0.28	0.31	0.3
Nitrite/Nitrate (mg N/L)	0.004 U	0.004 U	n/a	0.004 U
Total Phosphorous (mg P/L)	0.082	0.08	0.082	0.082
Total Kjeldahl Nitrogen (mg N/L)	0.44	0.44	0.38	0.44
Organic Carbon (mg C/L)	2	3.7	2.2	2.1
Ortho-phosphate (mg P/L)	0.079	0.077	0.077	0.081
Sucralose (µg/L)	0.010 U	n/a	n/a	n/a
Calcium (mg/L)	89.9	88.5	89.6	86.9
Magnesium (mg/L)	18	18.4	18.4	17.7
Potassium (mg/L)	1.4	1.2	1.0 I	1.1 I
Sodium (mg/L)	11.6	11.5	n/a	n/a
Boron (µg/L)	24.8	24.2	23.8	26.3

B- Results based on colony counts outside the acceptable range

I- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

U - Indicates that the compound was analyzed for but not detected.

n/a - not collected or not reported due to data quality concerns

Habitat Assessment

Due to the wetland-like nature of the spring run and accessibility issues, a habitat assessment could not be performed.

Aquatic Macroinvertebrate Community

Aquatic macroinvertebrates were not collected.

Periphyton Survey

A small amount of periphyton was present and collected on October 8, 2013. No dominant taxon was present in the sample. *Jaaginema* sp. and *Planktothrix* were present along with bacteria. No diatoms were observed in the sample aliquots.

Linear Vegetation Survey

No vegetation was observed growing around a spring boils or spring run, therefore a linear vegetation survey was not performed.

Summary

Sirena Spring #1 is a newly-charted spring located within the Seminole State Forest. It is surrounded by natural area with minimal human disturbance. The spring's discharge and water quality are consistent throughout a year. Water quality meets surface water criteria specified in Chapter 62.302, F.A.C.