Spring Creek Stream Assessment

Study Area

Spring Creek flows into Estero Bay and is located in the southern portion of Lee County. The watershed is impacted with a LDI value of 5.6 because of the urbanization on the upstream portion. The upstream portion of Spring Creek is also narrower than the downstream portion. Spring Creek widens and becomes more natural with as it moves downstream with mangroves and marsh areas along one of the banks. The creek buffer area is not highly altered with only some channelization at the mouth of the creek and a creek LDI value of 2.8.

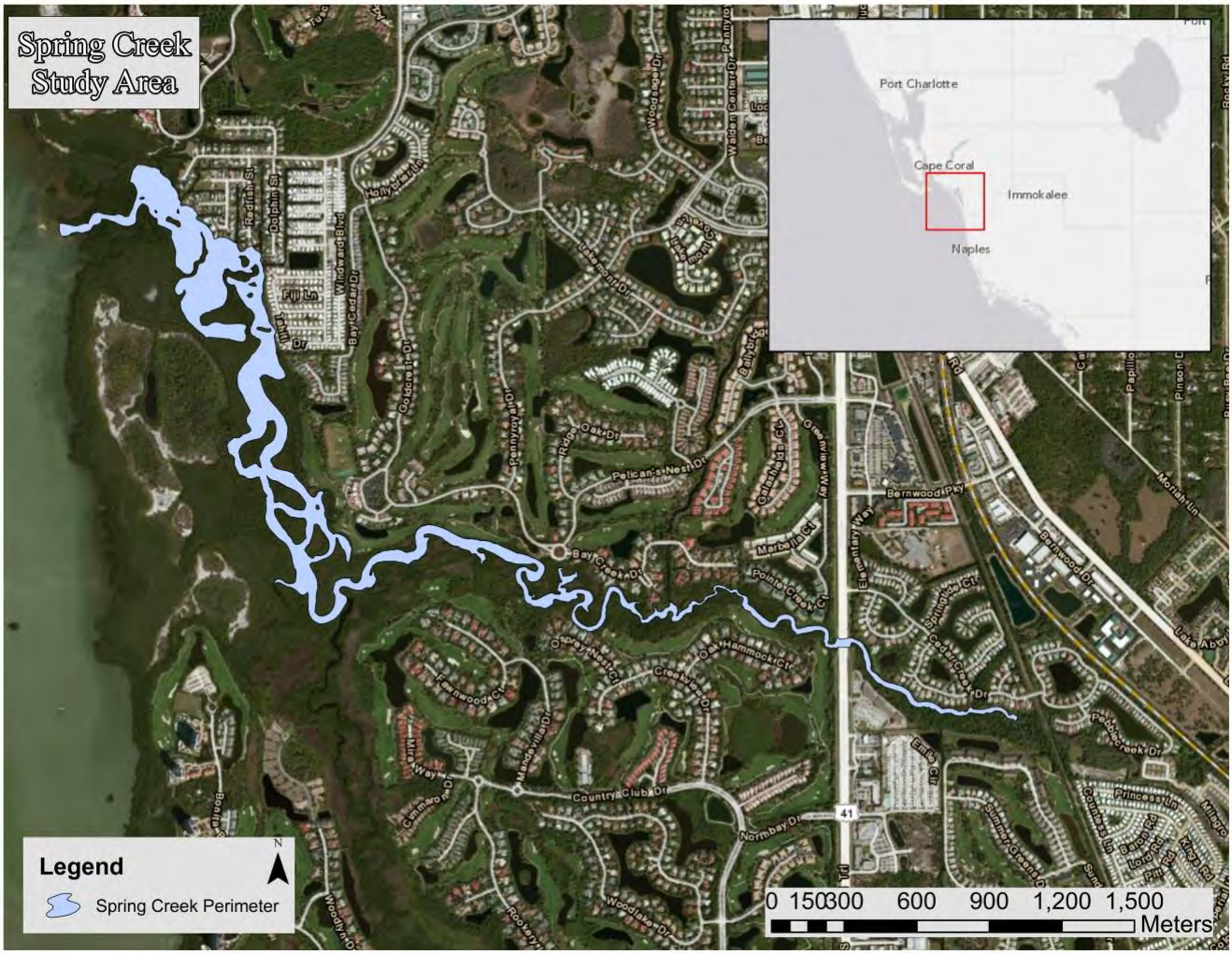

Figure 97. Overview of the Spring Creek Study Area

Vegetation Survey

The Spring Creek vegetation assessment encompassed 34 vegetation regions from the mouth in Estero Bay to above Highway 41 as shown in Figure 98 through Figure 100. In these regions, 44 species of vegetation were identified. Regions 1 through 32 were dominated by mangroves (*Rhizophora mangle, Laguncularia racemosa* and *Avicennia geminans*) with few other salt tolerant species present. The most upstream mangrove was *Rhizophora mangle, Laguncularia racemosa* and *Avicennia geminans* in Region 34. The first occurrence of Leather Fern (*Acrostichum danaeifolium*) was in Region 12, becoming dominant in regions 31, 32 and 34. Needle Rush (*Juncus roemerianus*) was first observed in Region 13 with the last occurrence in Region 22. Above Region 32 the vegetation communities are populated by many species indicative of dominating freshwater influence.

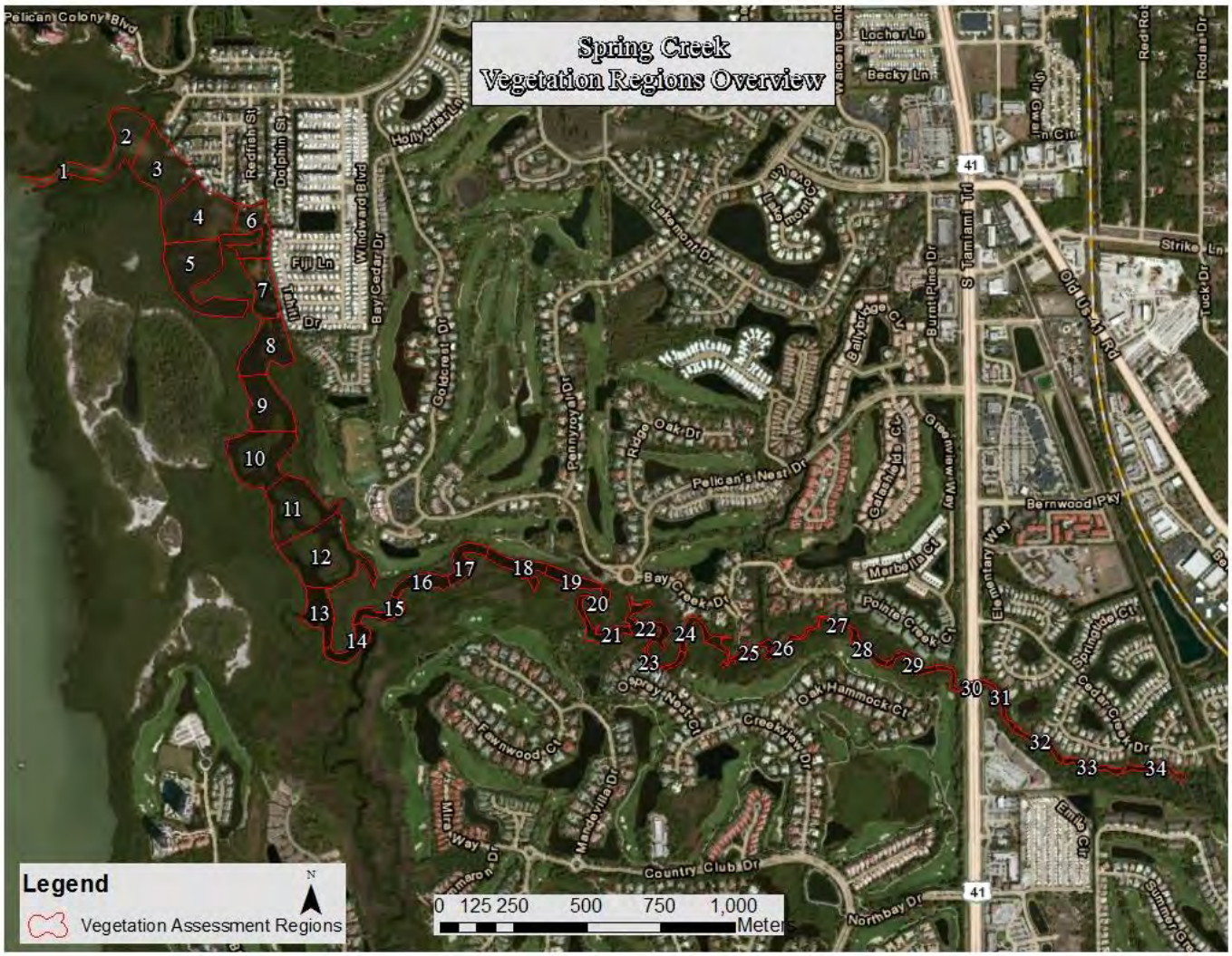

Figure 98. Overview of Spring Creek Vegetation Assessment Regions

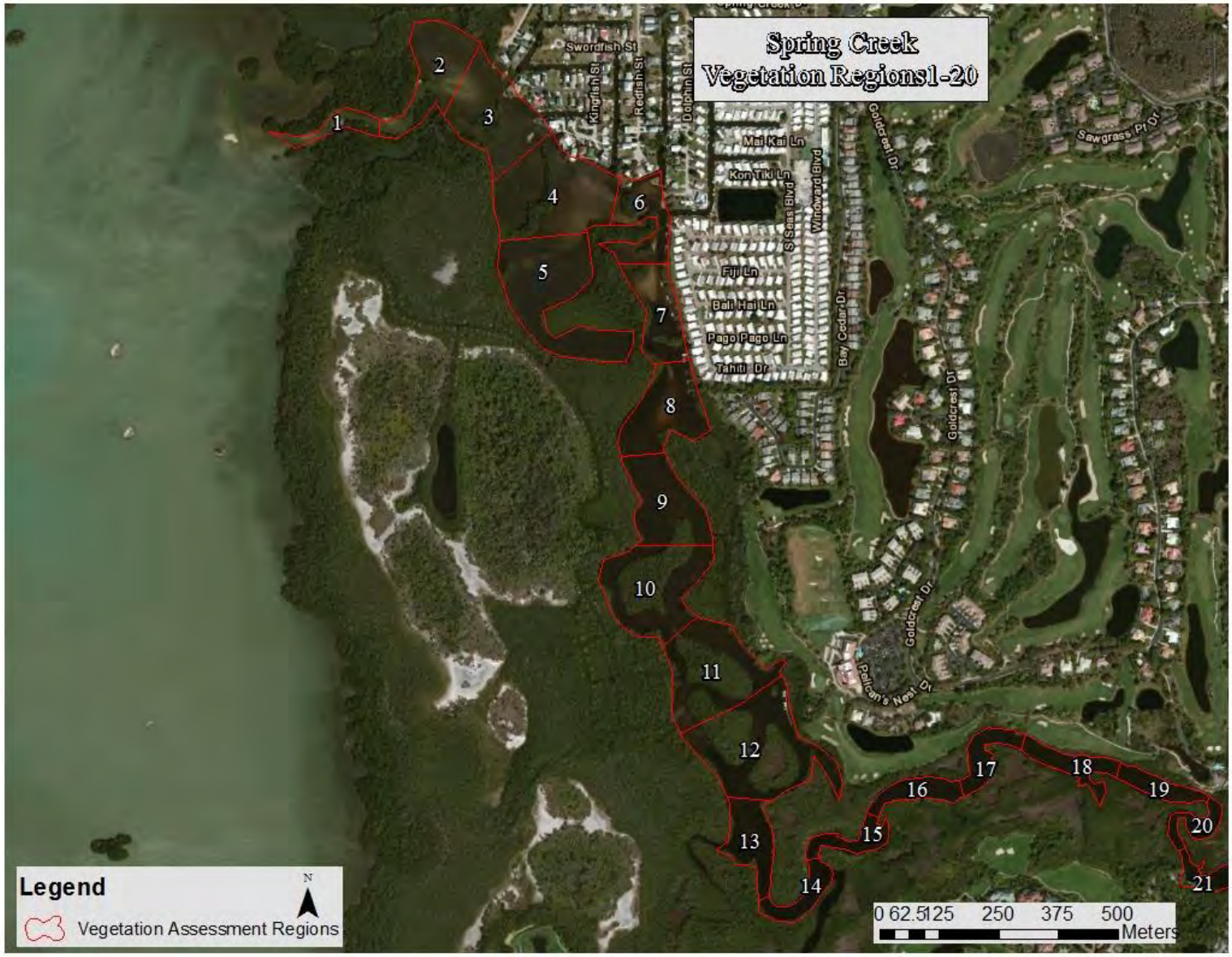

Figure 99. Spring Creek Vegetation Assessment Regions 1-20

Figure 100. Spring Creek Vegetation Assessment Regions 21-34

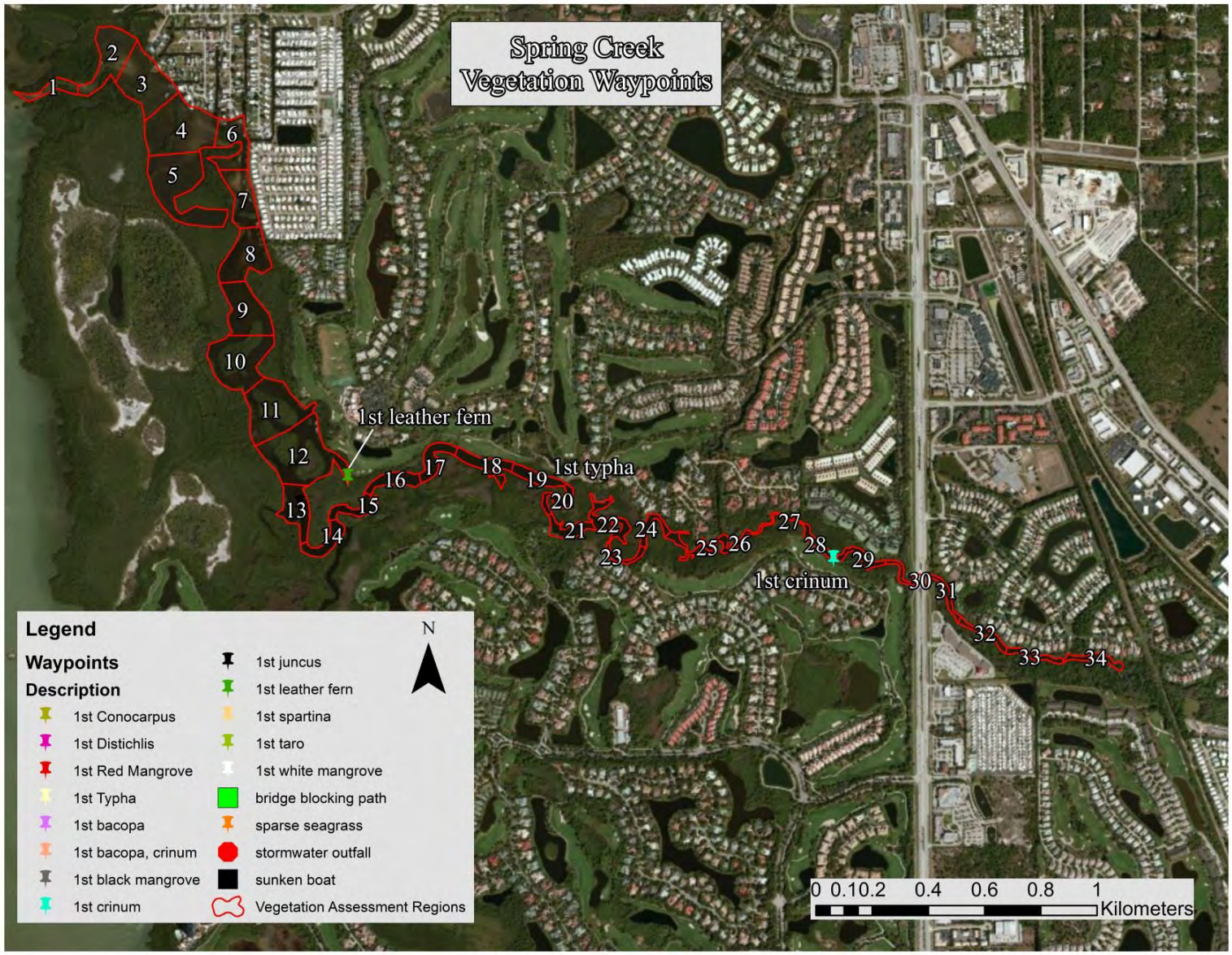

Figure 101. Spring Creek Vegetation Waypoints

Figure 101 shows the vegetation transition zone of Spring Creek indicating the most downstream Leather Fern, *Typha* and *Crinum*. Based on the vegetation assessment data for Spring Creek, regions 1 through 20 would comprise the highest salinity and tidal influence zone, regions 21 through 32 would comprise the "mixing" zone and regions 33 through 34 would comprise the freshwater dominant zone. The vegetation assessment species list is shown in Table 23.

Table 25. Spring Creek Vegetation Assessment List

Plant Species	Common Name	Sample Region																																			Regions Found
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	
Laguncularia racemosa	White Mangrove	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	1	1	34
Rhizophora mangle	Red Mangrove	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	1	1	34
Conocarpus erecta	Buttonwood		1	1		1	1	1	1	1	1	1	1	1	1	1	C	C	C	C	C	C	1	C	1	C	C	C	C	C	C	C	C	C	1	32
Acrostichum danaeifolium	Leather Fern												1			1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	C	C	1	C	20
Avicennia germinans	Black Mangrove	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1															20
Schinus terebinthifolius	Brazilian Pepper		1														1	1					1	1		1	1	C	1	1	C	1	1	C	1	15
Quercus virginiana	Virginia Live Oak											1				1			1			1			1	1	1	1	1	1	1	1	C	1		14
Vitis rotundifolia	Muscadine Grape											1							1			1		1			1	1	C	1	1	1	1	1	1	13
Sabal palmetto	Sabal Palm											1	1					1	1							1			1	1	1	1	1	1	1	12
Rhabdadenia biflora	Mangrove Rubber Vine								1			1		1			1			1	1		1	1	1		1			1						11
Baccharis halimifolia	Eastern False Willow, Saltbush																		1	1				1				1	1	1		1	1		1	9
Batis maritima	Saltwort			1	1			1	1	1		1		1		1																				8
Myrica cerifera	Wax Myrtle																					1		1				1	1	1			1	1	1	8
Casuarina equisetifolia	Australian Pine		1			1	1			1	1	1	1																							7
Crinum americanum	Swamp lily																												1	1	1	1	1	1	1	7
Annona glabra	Pond Apple																												1			1	1	1	C	6
Blechnum serrulatum	Swamp Fern					1				1	1																1	1						1		6
Dalbergia ecastaphyllum	Coin Vine									1	1	1					1		1						1											6
Pinus elliottii	Slash Pine											1						1				1			1	1	1									6
Senna spp	Senna																								1			1	1			1	1			5
Juncus roemerianus	Needle Rush, Black Rush													1			1	1					1													4
Typha spp.	Cattails																			1									1				1	1		4
Panicum repens	Torpedo Grass																							1										1	1	3
Persea palustris	Swampbay																																1	1	1	3
Quercus laurifolia	Laurel oak																																1	1	1	3
Borrichia frutescens	Bushy seaside Oxeye					1			1													1														3
Ardisia elliptica	Showbutton											1						1																		2
Ardisia escallonioides	Marlberry																					1													1	2
Boehmeria cylindrica	Bog Hemp, False Nettle																														1	1				2
Cladium jamaicense	Jamaica Swamp Saw Grass																														1		1			2
Sambucus canadensis	Elderberry																1		1																	2
Acer rubrum var. trilobum	Southern Red Maple																																		1	1
Andropogon virginicus var. glaucus	Broom grass																												1							1
Baccharis glomeruliflora	Groundsel Tree																													1						1
Blutaparon vermiculare	Silverhead, Saltweed											1																								1
Cephalanthus occidentalis	Common Buttonbush																																		1	1
Cyperus haspan	Jointed Flat Sedge																																1			1
Cyperus ligularis	Flat Sedge										1																									1
Eclipta alba (prostrata)	False Daisy, Yerba De Tajo																														1					1
Hydrocotyl umbellata	Manyflower Marshpennywort, Water Pennywort																												1							1
Pluchea rosea	Rosy Camphorweed																												1							1
Ruellia simplex	Britton's Wild Petunia																																1			1
Sagittaria lancifolia	Bulltongue Arrowhead, Duck Potato																							1												1
Taxodium ascendens	Pond Cypress																																		1	1

Habitat Assessment

Collected sonar data was processed through Dr. Depth software to analyze the strength of the return signal from the bottom to get an estimate of the relative bottom hardness for Spring Creek. Figure 102 shows the bottom hardness raster for Spring Creek. This map is meant to help identify locations of harder and softer bottoms for benthic invertebrate sampling, fish sampling and benthic chlorophyll sampling.

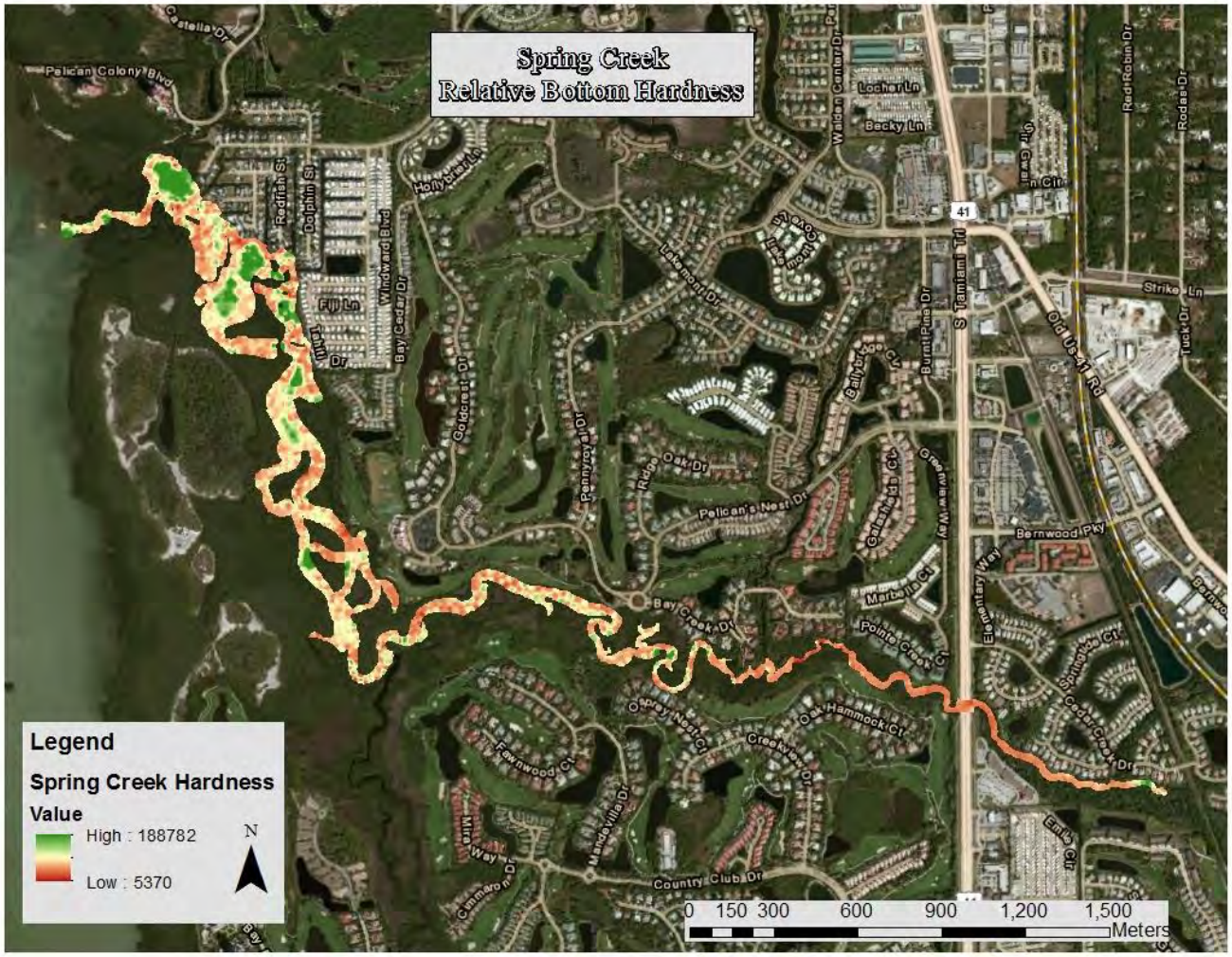

Figure 102. Spring Creek Relative Bottom Hardness Map

Bathymetry Mapping

In the study area, Spring Creek had a mean depth of 3.15 feet and a maximum depth of 14.71 feet. A total of 104.8 acres of creek was mapped during the assessment. At the time of assessment, Spring Creek contained an estimated 82,766,684 gallons of water in the study area. Figure 103 and Figure 104 detail the bathymetric mapping for Spring Creek showing the three depth stratum.

Figure 103. Spring Creek Bathymetric Stratum Map (1 of 2)

Figure 104. Spring Creek Bathymetric Stratum Map (2 of 2)