Mullet Creek Stream Assessment

Study Area

Mullet Creek flows into Old Tampa Bay. The watershed of Mullet Creek is urbanized containing both residential and commercial land uses resulting in a watershed Landscape Development Intensity (LDI) value of 7.0. Mullet Creek flows from through storm water ponds before finally discharging into a creek with natural vegetation buffers near its tidal reaches. Mullet Creek has a buffer LDI score of 6.5. There is a rated flow gauge located just above tidal influence which is also the site of a fixed water quality sampling station routinely sampled by Pinellas County.

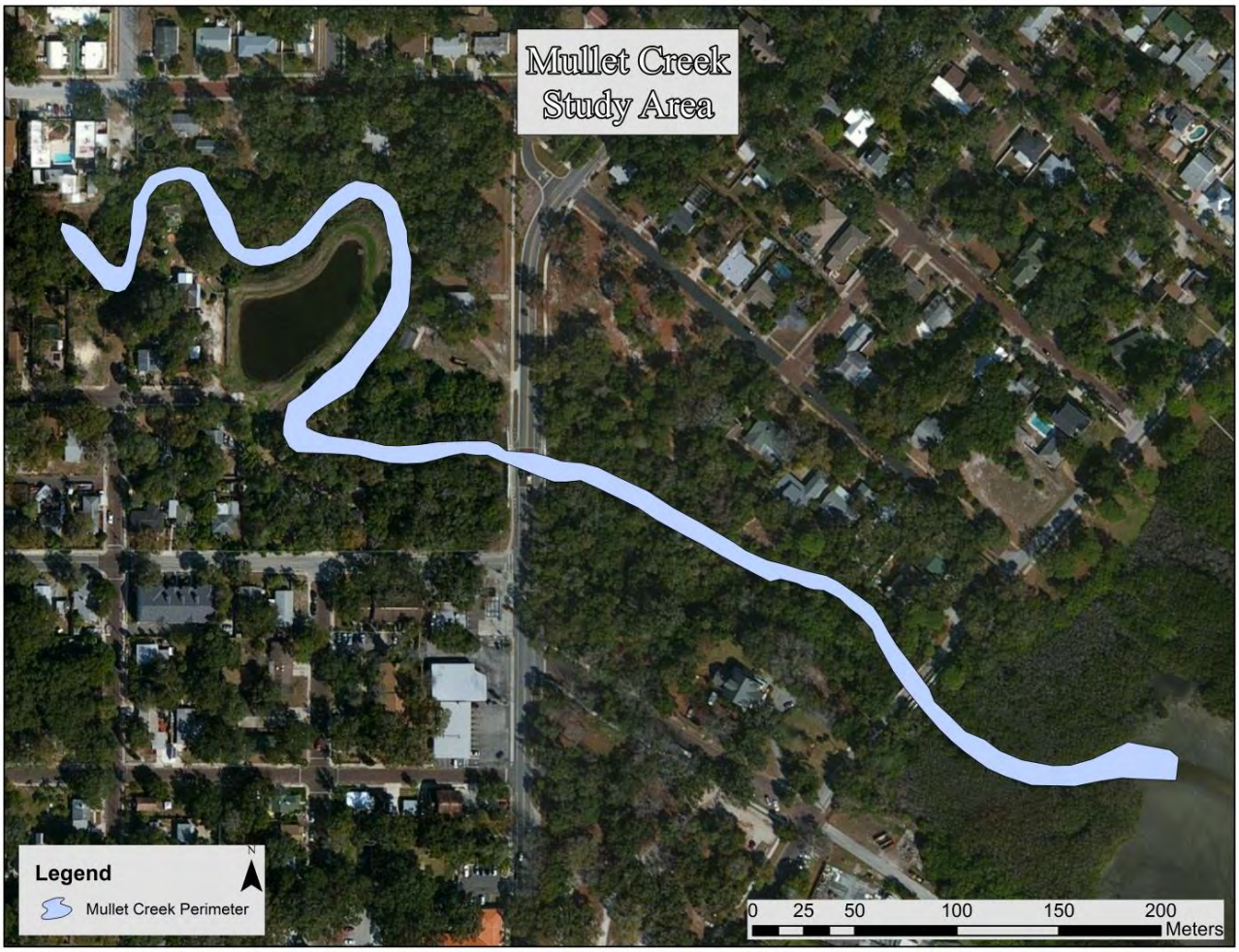

Figure 1. Overview of the Mullet Creek Study Area

Vegetation Survey

The Mullet Creek vegetation assessment encompassed four vegetation regions from the mouth in Old Tampa Bay as shown in Figure 2. In these regions, 70 species of vegetation were identified. Regions 1 and 2 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* was in Region 4. The first occurrence of Leather Fern (*Acrostichum danaeifolium*) was in Region 1. Needle Rush (*Juncus roemerianus*) was first observed in Region 2.

Figure 2. Overview of Mullet Creek Vegetation Assessment Regions

Figure 3 shows the vegetation transition zone of Mullet Creek indicating the most upstream Red Mangrove and Leather Fern as well as the most downstream *Distichlis* and *Juncus*. Based on the vegetation assessment data for Mullet Creek, regions 1 through 2 would comprise the highest salinity and tidal influence zone, Region 3 would comprise the "mixing" zone and Region 4 and above would comprise the freshwater dominant zone. The vegetation assessment species lists are shown in Table 1.

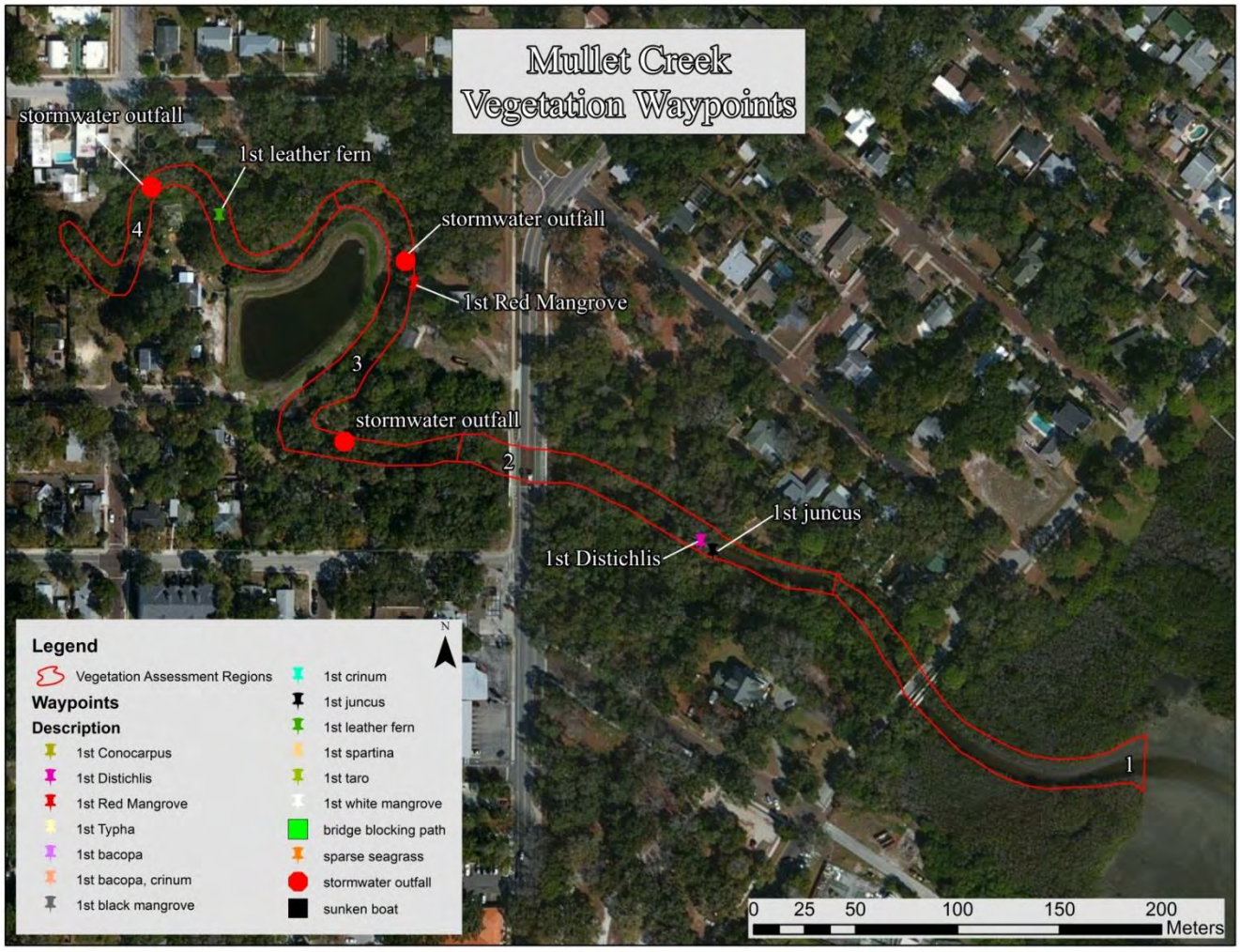

Figure 3. Mullet Creek Vegetation Waypoints

Table 1. Mullet Creek Vegetation Assessment List

Plant Species	Common Name	Sample Region				Regions Found
		1	2	3	4	
Acrostichum danaeifolium	Leather Fern	1	1	1	1	4
Dioscorea bulbifera	Air Potato	1	1	1	1	4
Quercus laurifolia	Laurel oak	1	1	1	1	4
Quercus virginiana	Virginia Live Oak	1	1	1	1	4
Sabal palmetto	Sabal Palm	1	1	1	1	4
Schinus terebinthifolius	Brazilian Pepper	1	C	1	1	4
Vitis rotundifolia	Muscadine Grape	1	1	1	1	4
Avicennia germinans	Black Mangrove	1	1	1		3
Baccharis halimifolia	Eastern False Willow, Saltbush		1	1	1	3
Cinnamomum camphora	Camphor-tree		1	1	1	3
Laguncularia racemosa	White Mangrove	C	C	1		3
Myrica cerifera	Wax Myrtle		1	1	1	3
Panicum maximum	Guneagrass		1	1	1	3
Parthenocissus quinquefolia	Woodbine		1	1	1	3
Serenoa repens	Saw palmetto	1	C	1		3
Abrus precatorius	Rosary Pea		1	1		2
Alternanthera philoxeroides	Alligator Weed			1	1	2
Bacopa monnieri	Common Bacopa, Herb-Of-Grace		1	1		2
Bidens alba	White Beggar Ticks			1	1	2
Campsis radicans	Trumpet Creeper			1	1	2
Crinum americanum	Swamp lily			1	1	2
Cupaniopsis anacardioides	Carrotwood			1	1	2
Cyperus ligularis	Flat Sedge		1	1		2
Eupatorium capillifolium	Dog Fennel			1	1	2
Ludwigia peruviana	Peruvian Primrosewillow			1	1	2
Lygodium japonicum	Japanese Climbing Fern			1	1	2
Melia azedarach	Chinaberry Tree			1	1	2
Nephrolepsis spp.	Sword Fern		1	1		2
Rhizophora mangle	Red Mangrove	C	C			2
Ricinus communis	Castorbean			1	1	2
Rumex verticillatus	Swamp Dock			1	1	2
Sambucus canadensis	Elderberry			1	1	2
Sesbania herbacea	Danglepod Sesban			1	1	2
Sphagneticola (Wedelia) trilobata	Creeping Oxeye			1	1	2
Syngonium podophyllum	Nephitis, American Evergreen			1	1	2
Acer rubrum var. trilobum	Southern Red Maple				1	1
Amaranthus australis	Southern Amaranth				1	1
Ambrosia artemisiifolia	Common Ragweed				1	1
Bambusa spp.	Bamboo				1	1
Callicarpa americana	American Beauty Berry			1		1
Carya aquatica	Water Hickory		1			1
Colocasia esculenta	Wild Taro, Dasheen, Coco Yam			1		1
Cyperus involucratus	Umbrella flat sedge			1		1
Cyperus odoratus	Fragrant Flat Sedge			1		1
Cyperus surinamensis	Flat Sedge			1		1
Distichlis spicata	Salt Grass		1			1
Echinochloa walteri	Coast Cockspur Grass (hairy)				1	1
Eclipta alba (prostrata)	False Daisy, Yerba De Tajo			1		1
Erechtites hieracifolia	Fireweed				1	1
Hydrocotyl umbellata	Manyflower Marshpennywort, Water Pennywort			1		1
Hygrophila polysperma	East Indian Hygophila			1		1
Hypericum tetrapetalum	Fourpetal St. John's-Wort			1		1
Juncus roemerianus	Needle Rush, Black Rush		1			1
Lantana spp.	Lantana				1	1
Leucaena leucocephala	White leadtree		1			1
Liquidambar styraciflua	Sweetgum			1		1
Musa spp.	Banana Tree				1	1
Nerium oleander	Oleander				1	1
Panicum repens	Torpedo Grass				1	1
Phragmites australis	Common Reed				1	1
Pinus spp	Pine	1				1
Pluchea rosea	Rosy Camphorweed			1		1
Quercus nigra	Water Oak			1		1
Ruellia simplex	Britton's Wild Petunia			1		1
Sanseveria hyacinthoides	Bowstring Hemp				1	1
Solidago sempervirens	Goldenrod	1				1
Spartina bakerii	Cordgrass			1		1
Thelypteris denata	Shield Fern				1	1
Urena lobata	Caesar's Weed				1	1
Urochloa mutica	Para Grass			1		1
Ximenia americana	Tallow Wood, Hog Plum		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 Mullet Creek. Figure 4 shows the bottom hardness raster for Mullet Creek. In this raster, the higher the hardness value, the harder the bottom substrate. This map is meant to help identify locations of harder and softer bottoms for benthic invertebrate sampling, fish sampling and benthic chlorophyll sampling.

Figure 4. Mullet Creek Relative Bottom Hardness Map

Bathymetry Mapping

In the study area, Mullet Creek had a mean depth of 2.14 feet and a maximum depth of 5.44 feet. A total of 2 acres of creek was mapped during the assessment. At the time of assessment, Mullet Creek contained an estimated 795,253 gallons of water in the study area. Figure 5 details the bathymetric mapping for Mullet Creek showing the three depth stratum.

Figure 5. Mullet Creek Bathymetric Stratum Map