

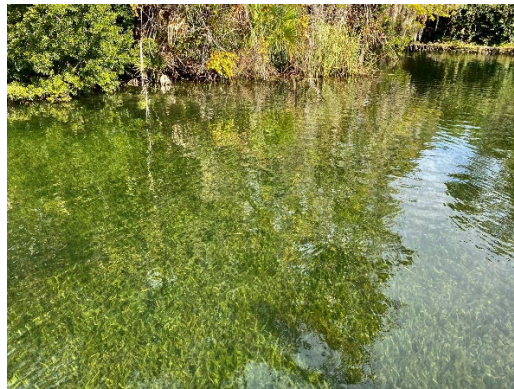
**INTERIM REPORT
BASELINE BIOLOGICAL ASSESSMENT**

KING'S BAY RESTORATION AREA: PHASE 3B-3

May 10, 2022

Prepared for:

**Save Crystal River, Inc.
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Figure 1. Project Location Map

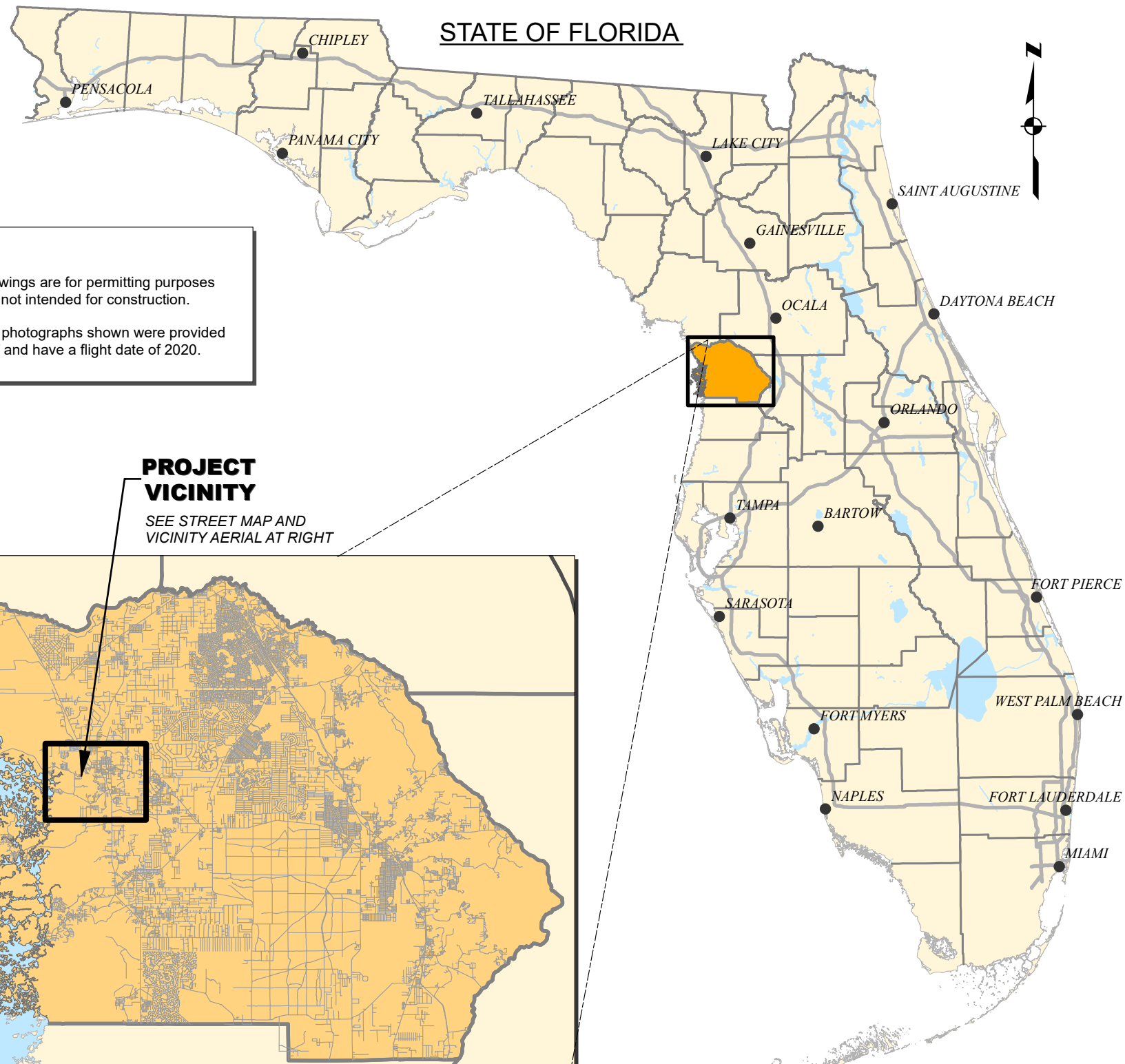
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INTRODUCTION

This interim progress report summarizes the baseline sampling of Kings Bay Restoration Phase 3B3 (**Figure 1**). This interim report includes the results of **Task 2b. Field Water Quality and PAR** measurements collected. The interim report also documents the completion of **Task 3a Baseline Biological Sampling Event** and the completion of **Task 3b. Retrieve, Process and Preserve Hester-Dendy substrates**. The macroinvertebrate collections are sorted and preserved immediately but identifications must be done in the laboratory by and expert using a stereozoom microscope and taxonomic keys. Once all organisms are identified and enumerated, a final Baseline Biological Assessment Report will be submitted to Save Crystal River. At this time the final report is expected to be completed by June 15, 2022.

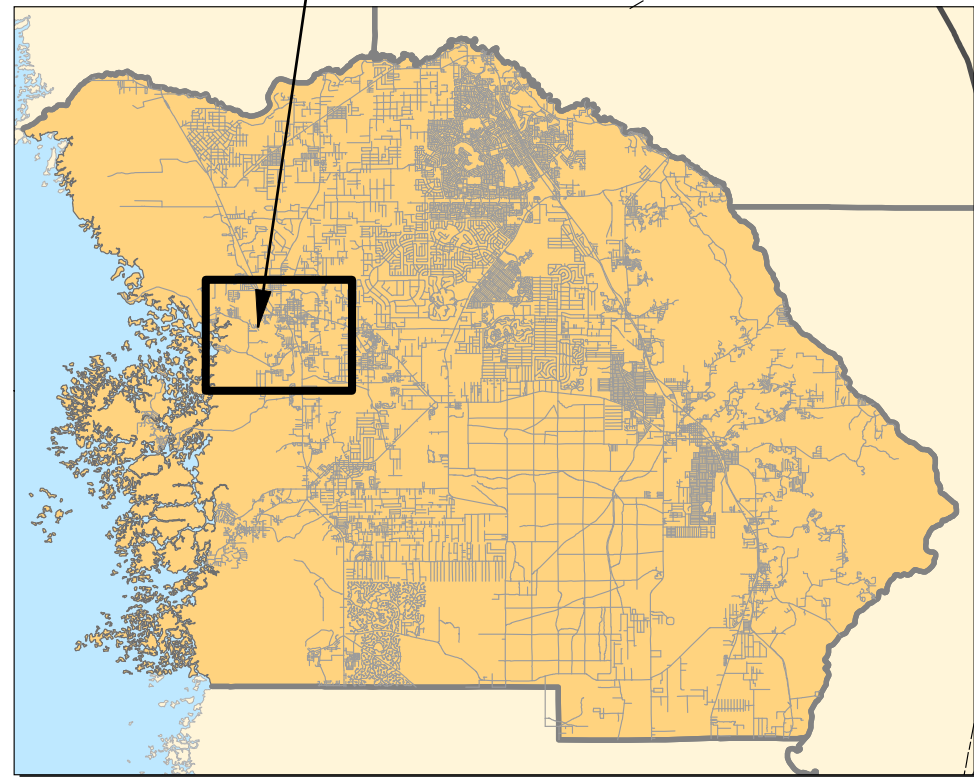
O:\2020\20203063-001\Environmental\Exhibits\Kings Bay\LocMap.mxd Date: 10/28/2021 Time: 2:15:04 PM User: BKM



NOTES

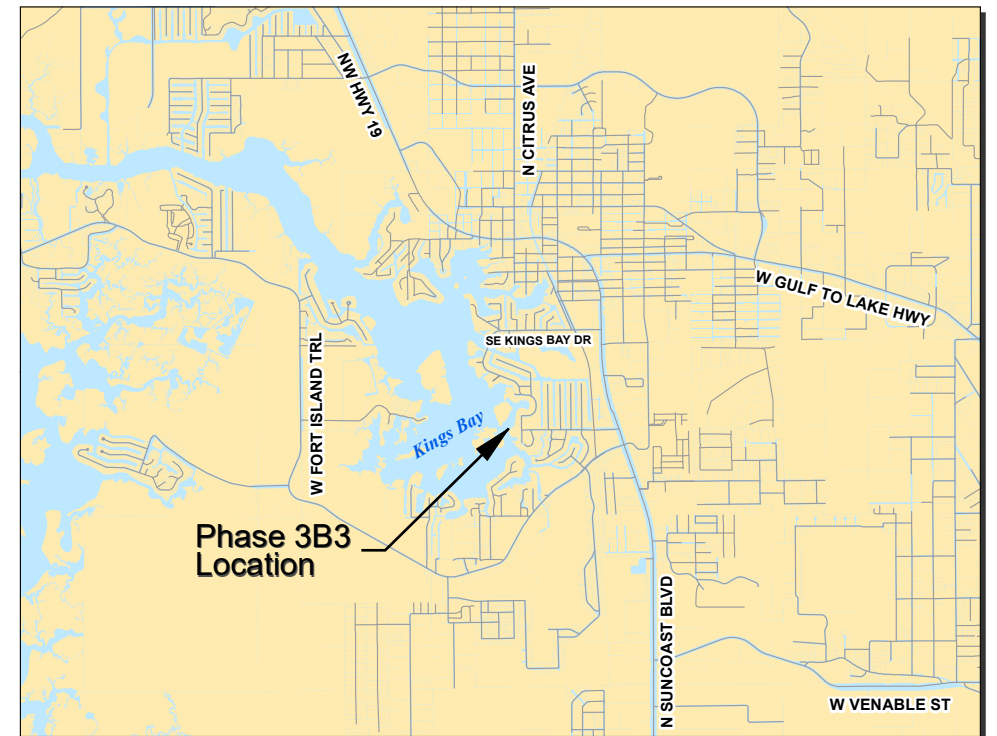
1. These drawings are for permitting purposes only and are not intended for construction.
2. The aerial photographs shown were provided by the FDOT and have a flight date of 2020.

PROJECT VICINITY
SEE STREET MAP AND VICINITY AERIAL AT RIGHT



CITRUS COUNTY
N.T.S

Sections 28 Township 18 S, Range 17 E
Latitude: 28° 53' 07" N; Longitude: 82° 35' 34" W



Phase 3B3 Location

STREET MAP
N.T.S



Phase 3B3 Location

VICINITY AERIAL
N.T.S

Homosassa River Restoration
Project, Inc.

Homosassa River Restoration
Phase 3B3
Citrus County, Florida

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Project Location Map

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
Oct 2021	20203063-001	28-19-17	NTS	Fig. 1

METHODS & PRELIMINARY RESULTS

Task 2b. Field Water Quality and PAR: Field water chemistry profile data were collected during the preliminary assessment and core sampling (Task 2a), and baseline biological sampling events (Tasks 3a and 3b.). Parameters included dissolved oxygen (DO), temperature, salinity (ppt), and photosynthetically active radiation (PAR). Samples were collected from the surface, mid-depth, and near bottom to assess stratification, freshwater lensing, and light availability in the littoral zone. A summary of water chemistry data is included in **Table 1**. Water chemistry profiles were collected at low tide and high tide from the center of Phase 3B3. Profiles indicate that temperature and salinity were relatively constant from top to bottom with salinity stable at 0.3 ppt. Dissolved oxygen (DO) was stratified at high tide with less than 50% of surface DO (5.8 mg/l) at 2.1 meters (2.7 mg/l) just above the bottom. This may indicate biochemical oxygen demand from organic sediments.

Light penetration through the water column was good with 38% of ambient surface light, or photosynthetically active radiation (P.A.R.) reaching the bottom (1.0 meters) at low tide. During high tide at mid-day, 47% of surface P.A.R. was recorded at 1.1 meters, at the top of existing grass beds where total depth was 2.1 meter. SAV growth in Phase 3B3 was not light limited at the time of sampling. *Vallisneria americana* requires only about 10% of ambient surface P.A.R. to grow and thrive (personal communication with James Douglass, Ph.D. and Serge Thomas, Ph.D.).

Table 1. Baseline Water Chemistry for Kings Bay Phase 3B3.						
	Depth (m)	Temp. C°	Salinity ppt	D. O. mg/l	P.A.R.	% P.A.R.
11/2/2022	0.1	22.9	0.3	4.2	1312	100%
10:30	1.0	22.3	0.3	3.8	784	60%
Low Tide	1.5	22.1	0.3	3.4	492	38%
	Depth (m)	Temperature C	Salinity ppt	D. O. mg/l	P.A.R.	% P.A.R.
11/2/2022	0.1	24.4	0.3	5.8	1540	100%
13:26	1.0	23.2	0.3	4.1	843	55%
High Tide	2.1	22.4	0.3	2.7	730*	47%
	* Top of SAV bed at 1.1 meters in depth					



Figure 2. Aerial view of SAV cover (dark patches are SAV or algal clumps)

Task 3a. Baseline Biological Sampling was conducted on November 9, 10 and 11, 2021. Fish sampling was conducted using two types of fish traps (Breder 1960, Goture®), a 30-meter bag seine with ¼ inch mesh, and visual observations along a transect across Phase 3B3. Macroinvertebrate collections were supplemented by qualitative dip net sampling using a standard D-frame dip net with 1.0 mm mesh. Dip net and HD macroinvertebrate samples are being identified to the lowest practical taxa and results will be presented in the Baseline Biological Report.

Submerged aquatic vegetation (SAV) cover was assessed during the benthic core sampling events with overall cover estimated from drone photographs taken on November 2, 2021. SAV consisted primarily of eel grass (tape grass), *Vallisneria americana* with estimated cover at 2.3-acres of the total of 7.67-acre area in Phase 3B3 (**Figure 2**). Post-restoration benthic habitat conditions are expected to result in increased SAV coverage as soft muck/mud sediments are removed, and the area replanted.

Preliminary results of the fish sampling indicated that 10 clear plastic Breder traps were ineffective after one-hour deployments. Breder traps are highly effective at collecting small fishes in wetlands with dense vegetation (Sargent and Carlson 1987, Main et al. 2007, Ceilley 2008) and shallow streams and canals (Ceilley et al. 2013) Seining was moderately successful for collecting largemouth bass, *Micropterus salmoides*, tidewater mojarra, *Eucinostomus harengulus*, Atlantic needlefish, *Strongylura marina*, spotted sunfish, *Lepomis punctatus*, and blue crab, *Callinectes sapidus*. However, deep muck/mud hindered pulling of the seine and only two seine hauls were attempted. Visual surveys and modified crayfish traps were the most effective methods of characterizing fish communities in Phase 3B3. The results of the fish sampling will be presented in the Baseline Biological Report.

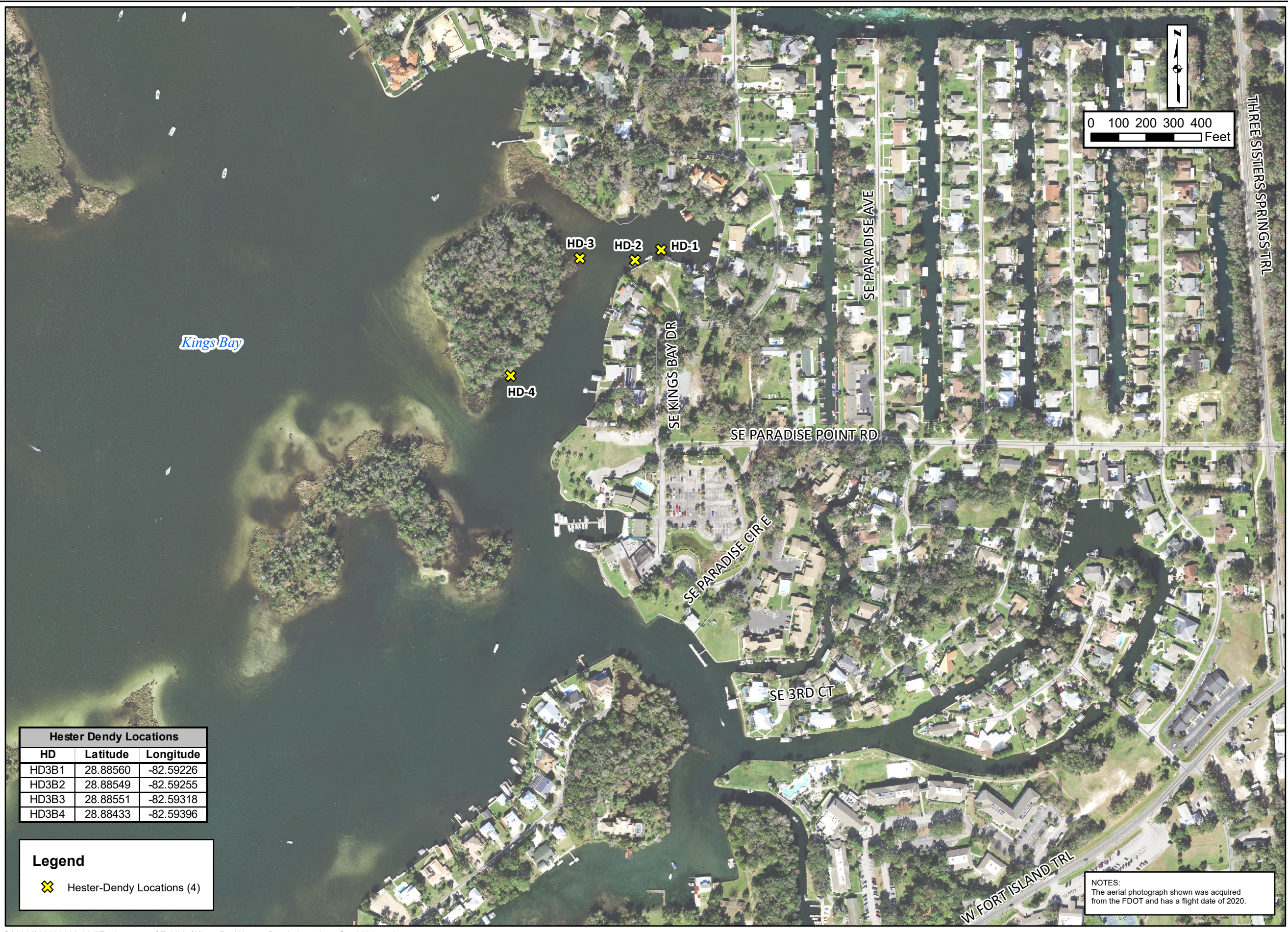
Task 3b. Retrieve, Process and Preserve HD substrates: On October 12, 2021, four Hester-Dendy (HD) substrates were deployed to ensure that at least three HD substrates would remain after the 28-day colonization period (FDEP 1993). **Figure 3** shows the location of the four (4) HDs that were deployed and collected four weeks later. On November 10, 2021, after 28-day colonization period, the HD substrates were retrieved and placed individually into gallon

REVISIONS	DATE
NO.	
DESCRIPTION	

Hester-Dendy
 Locations

SHEET NUMBER

Fig. 3



Kings Bay

HD-3 HD-2 HD-1

HD-4

SE KINGS BAY DR

SE PARADISE AVE

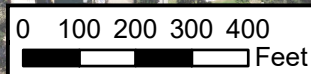
THREE SISTERS SPRINGS TRL

SE PARADISE POINT RD

SE PARADISE CIR

SE 3RD CT

W FORT ISLAND TRL



Hester Dendy Locations		
HD	Latitude	Longitude
HD3B1	28.88560	-82.59226
HD3B2	28.88549	-82.59255
HD3B3	28.88551	-82.59318
HD3B4	28.88433	-82.59396

Legend
 Hester-Dendy Locations (4)

NOTES:
 The aerial photograph shown was acquired from the FDOT and has a flight date of 2020.

plastic bags and preserved on ice for processing the following day at the Johnson Engineering wet laboratory in Fort Myers, Florida. HD samples were disassembled over 12-inch standard sieves and carefully rinsed to remove organisms and retain them on a No. 35 sieve with 500-micron mesh. This method collects all aquatic macroinvertebrates that are greater than 0.5 mm in size. All organisms collected were then preserved in plastic jars with 80% ethanol for later identification to the lowest practical taxonomic level using a stereo-zoom microscope and latest available taxonomic keys for Florida.

SUMMARY

This interim progress report is intended to provide a summary update to Save Crystal River on the status of the Baseline Biological Assessment being conducted by staff ecologists and aquatic biologists at Johnson Engineering. This interim report should satisfy the deliverables for Tasks 2b, 3a and 3b of the professional services agreement. Task 4. Baseline Final Report is in progress and pending the identification of all aquatic macroinvertebrates collected by HD substrates and dip-net sampling. The Final Baseline Biological Assessment Report is expected to be completed by June 15, 2022, prior to the end of the fiscal year for the State of Florida.

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- Note:** James Douglass, Ph.D. and Serge Thomas, Ph.D. are faculty members at the Water School at Florida Gulf Coast University, Fort Myers, FL.