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MARINE RESEARCH ECOLOGICAL CONSULTING

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ESCAMBIA BAY & PENSACOLA BAY INTERTIDAL OYSTER REEF MAPPING & ASSESSMENT

Located in
Escambia Bay & Pensacola Bay
Escambia County
Florida

Prepared for
Escambia County, Florida

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2021

Hydrographic Surveying & Mapping ● Environmental Services ● Geographic Information Systems (GIS)

CONTENTS

Escambia Bay and Pensacola Bay Intertidal
Oyster Reef Mapping and Assessment

The desktop review portion of this intertidal oyster project was completed by Suzanne Beasley, senior GIS analyst at Custom Mapping Services. The findings of the desktop review were submitted to Gabe Johnson at MREC Environmental for use in the ground-truthing and assessment component of project.

OBJECTIVE

The objective of this project was to identify any possible oyster habitats in the intertidal zones of Escambia Bay. Utilizing satellite imagery, various intertidal features were visible, but as of yet the quality of said imagery and visibility of the intertidal zone water precludes definitive identification of those features. The desktop review indicated any and all areas of interest (AOI) that were unidentifiable as targets for further study. The ground-truthing portion of the study used field observations to explicitly identify each and every AOI in order to identify possible oyster habitats, and differentiate them from other intertidal features such as algae, aquatic vegetation, limestone, mudflat variations, or other debris. Any areas that were found to be oyster habitats were then assessed for population health and standing stock.

SECTION 1 – DESKTOP REVIEW

METHODS

Numerous sources for aerial imagery were reviewed, and those images with the best clarity, visibility and most recent dates were chosen for the photo-interpretation work. The entire shorelines for Escambia Bay, and Pensacola Bay were analyzed in detail (typical scale for viewing was 1 inch = 100 feet) using three main photographs simultaneously, listed below:

- 2018 true-color aerial photograph (1-ft resolution, acquired in January); sourced from Google Earth.
- 2019 USDA National Agriculture Imagery Program (NAIP) true-color aerial photographs (1-m resolution, acquired in summer season); sourced from Geospatial Data Gateway at USDA, Natural Resource Conservation Service.

- 2016 DOQQ hi-resolution true-color aerial photographs (1-ft resolution, acquired in January); sourced from LABINS at Florida Dept. of Environmental Protection, Division of State Lands, Bureau of Survey and Mapping.

The Google Earth images from January, 2018 proved to be the most useful in finding potential target oyster reef areas and had optimal clarity. This particular date showed very low water levels for the entire study area, which made the intertidal zone highly visible. However, each location was cross-referenced with the other photographs listed as a comparison.

Potential target areas were marked, and polygons were digitized using GIS software, when any of the following features were observed on the bed of the intertidal zone: linear or oval shapes of dark brown/olive or light brown fine or coarse textures that were noticeably different than the surrounding smooth sandy or muddy water-bottoms. Some of these textured areas were sparse in concentration and some were more densely packed. A total of 33 target locations were identified and included on the overview map.

PRODUCTS

- An overview map was produced to show the location of all target areas found.
- Several zoomed-in maps were produced to show more detail of the target areas and their ID numbers.
- A shapefile (ESRI ArcGIS format) was produced, including polygons for all potential target oyster reef areas. The shapefile contains unique ID numbers for each polygon and latitude/longitude coordinate information for centroid points within each polygon.
- A spreadsheet (MS Excel) was produced, listing all target areas with their corresponding ID numbers and a description of their visual appearance.

RESULTS

Desktop Study Overview

An overview map identifying all the (AOI) areas of interest (33 target areas), as well as eight (8) zoomed-in maps were produced and shown in Figures 1-9. Tables A and B contain coordinate locations of the intertidal target areas in Escambia Bay and Pensacola Bay. As stated the overview map identifying all 33 (AOI) locations can been seen below. (Figure 1).

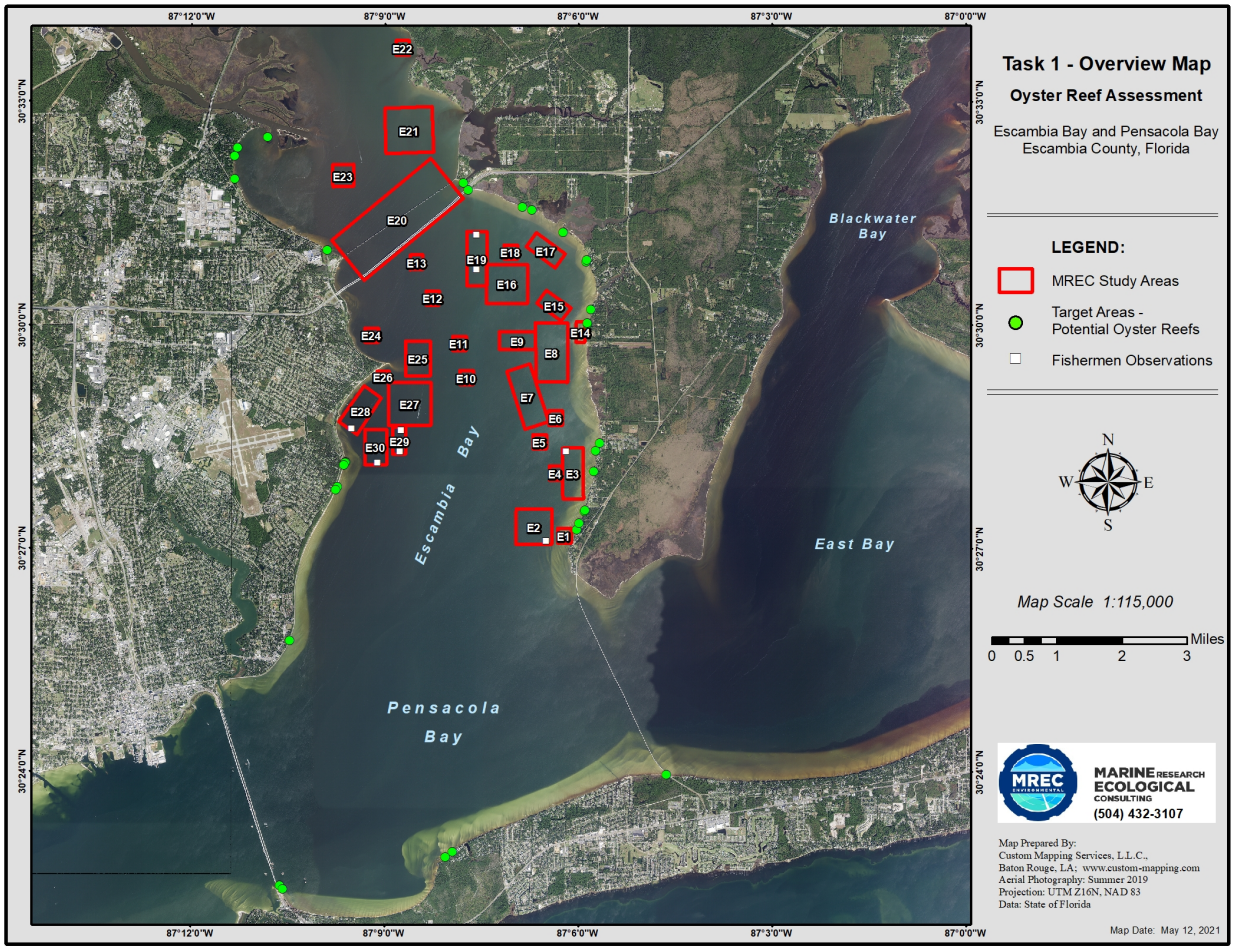


Figure 1. Overview Map

Escambia Bay					
Station	**Longitude**	**Latitude**	**Station**	**Longitude**	**Latitude**
1	87° 6.0241' W	30° 27.2443' N	15	87° 6.7245' W	30° 31.5416' N
2	87° 5.9881' W	30° 27.3329' N	16	87° 7.7086' W	30° 31.8129' N
3	87° 5.9092' W	30° 27.4911' N	17	87° 7.7777' W	30° 31.9051' N
4	87° 5.8982' W	30° 27.5054' N	18	87° 10.8180' W	30° 32.5169' N
5	87° 5.7593' W	30° 28.0361' N	19	87° 11.2795' W	30° 32.3762' N
6	87° 5.7313' W	30° 28.3024' N	20	87° 11.3245' W	30° 32.2588' N
7	87° 5.6645' W	30° 28.4115' N	21	87° 11.3232' W	30° 31.9556' N
8	87° 5.8576' W	30° 30.0206' N	22	87° 9.8881' W	30° 30.9974' N
9	87° 5.8600' W	30° 30.0036' N	23	87° 9.6073' W	30° 28.1519' N
10	87° 5.8062' W	30° 30.2020' N	24	87° 9.6146' W	30° 28.1407' N
11	87° 5.8798' W	30° 30.8424' N	25	87° 9.6298' W	30° 28.1141' N
12	87° 5.8730' W	30° 30.8680' N	26	87° 9.7269' W	30° 27.8175' N
13	87° 6.2362' W	30° 31.2427' N	27	87° 9.7558' W	30° 27.7766' N
14	87° 6.8735' W	30° 31.5787' N			

Table A. Intertidal (AOI) target locations for Escambia Bay.

Pensacola Bay		
Station	**Longitude**	**Latitude**
28	87° 10.4692' W	30° 25.7565' N
29	87° 10.6176' W	30° 22.4610' N
30	87° 10.5728' W	30° 22.4219' N
31	87° 8.0508' W	30° 22.8491' N
32	87° 7.9403' W	30° 22.9132' N
33	87° 4.6291' W	30° 23.9597' N

Table B. Intertidal (AOI) target locations for Pensacola Bay.

Intertidal Areas of Interest (AOI) Maps

Aerial maps showing the zoomed in locations of the areas of interest can be seen below **(Figures: 2-9).**

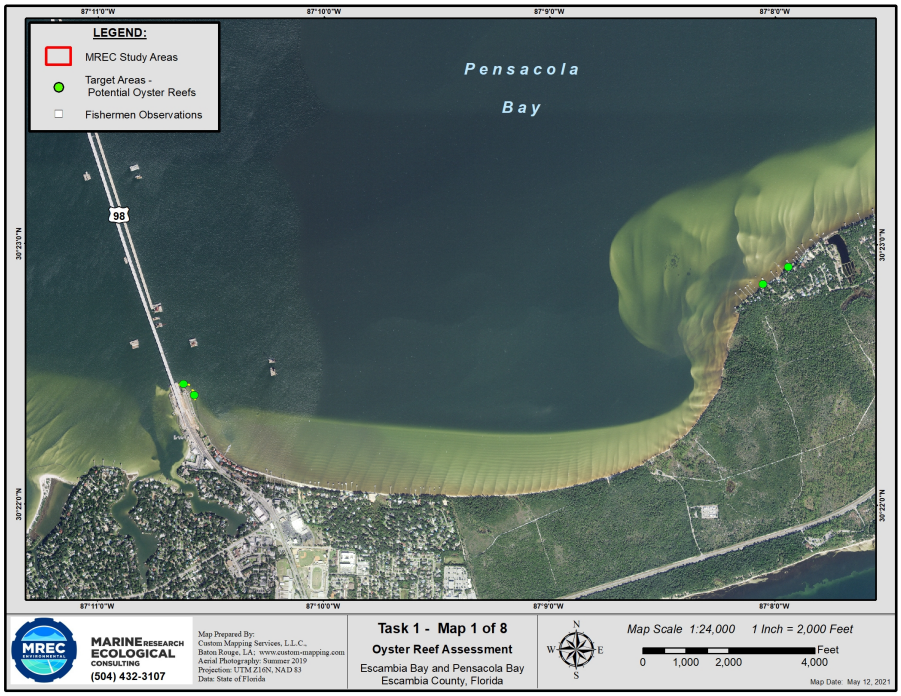


Figure 2. Task 1 - Mask 1 of 8

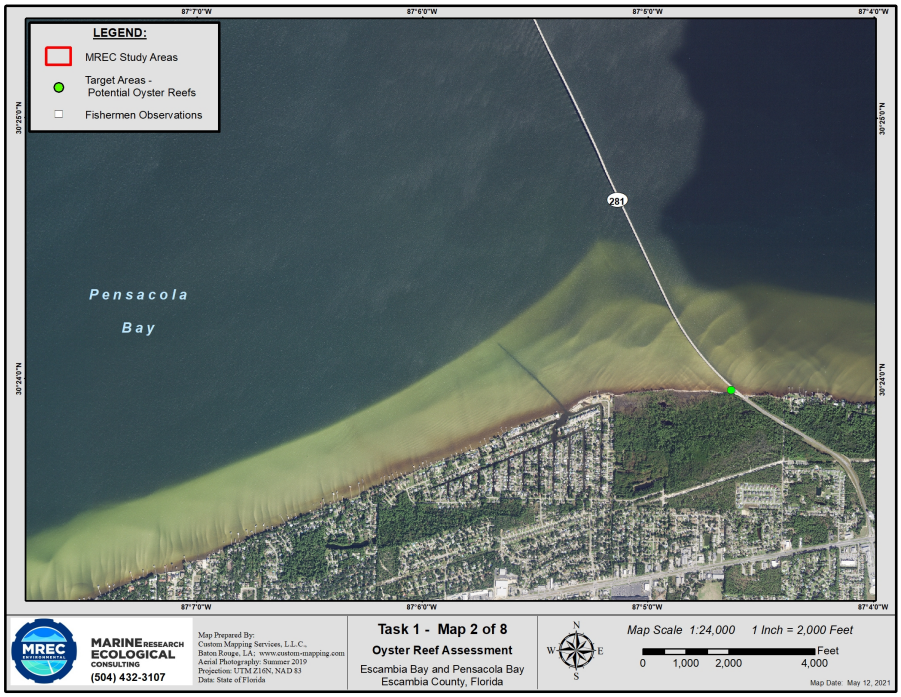


Figure 3. Task 1 - Map 2 of 8

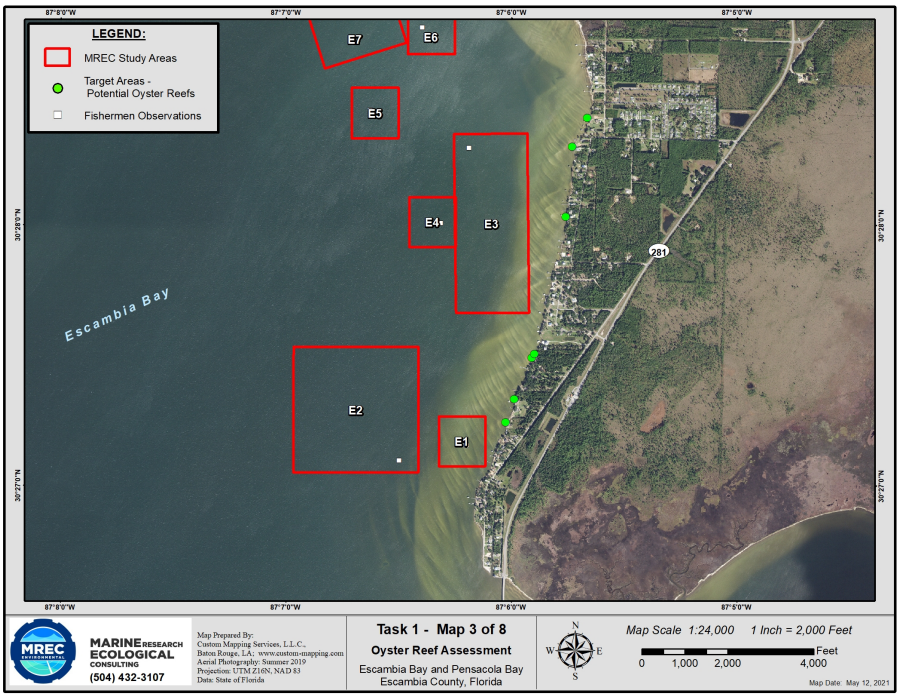


Figure 4. – Task 1 - Map 3 of 8

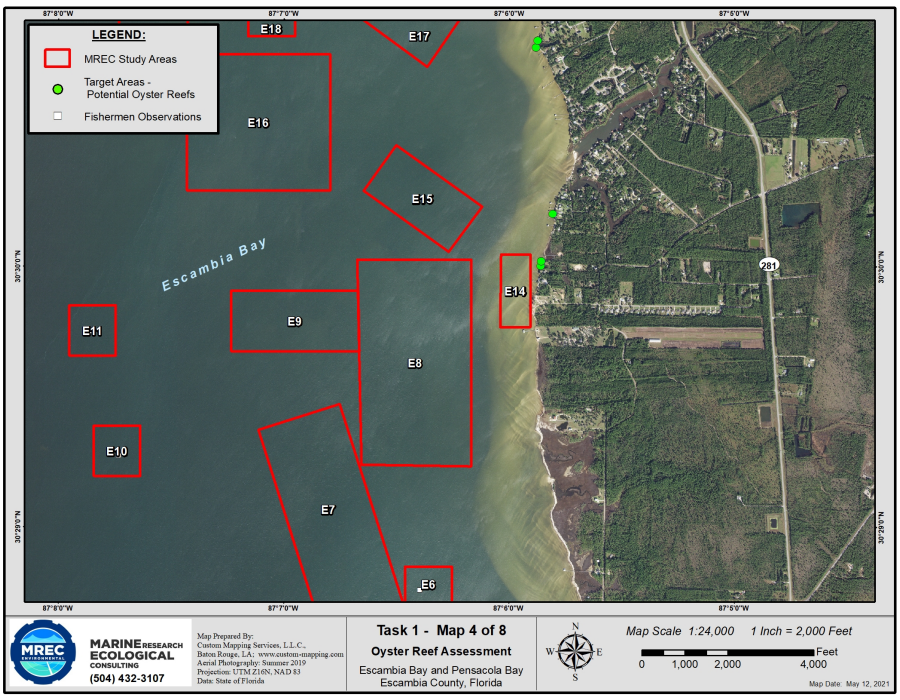


Figure 5. – Task 1 - Map 4 of 8

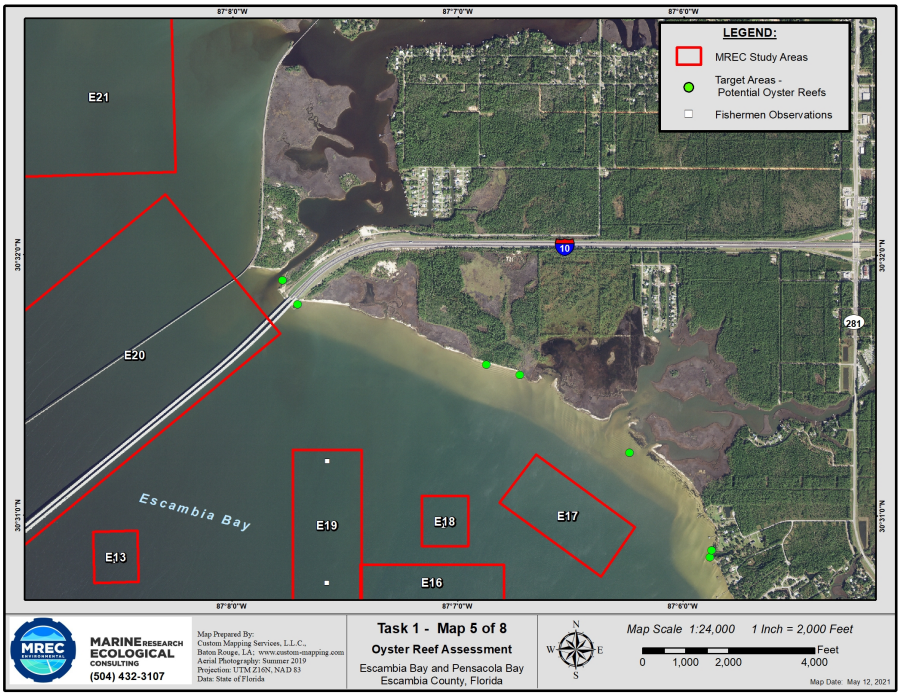


Figure 6. - Task 1 - Map 5 of 8

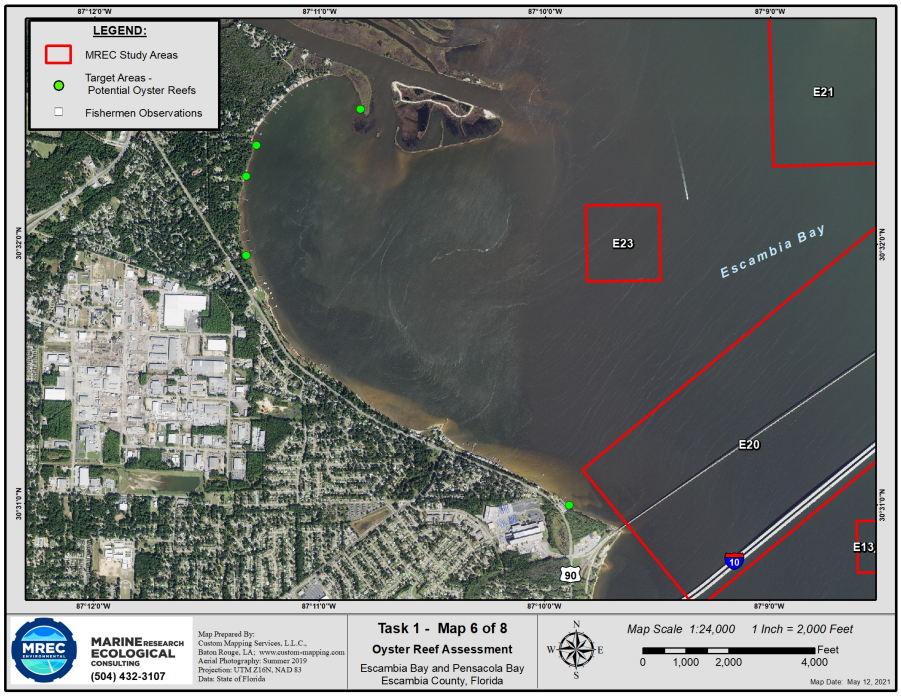


Figure 7. Task 1 - Map 6 of 8

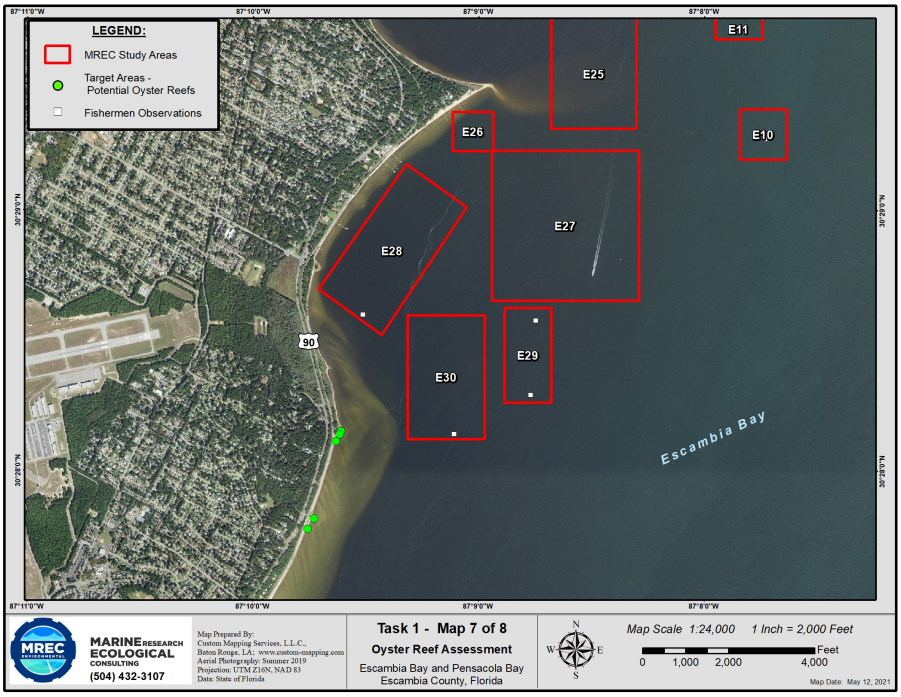


Figure 8. Task 1 - Map 7 of 8

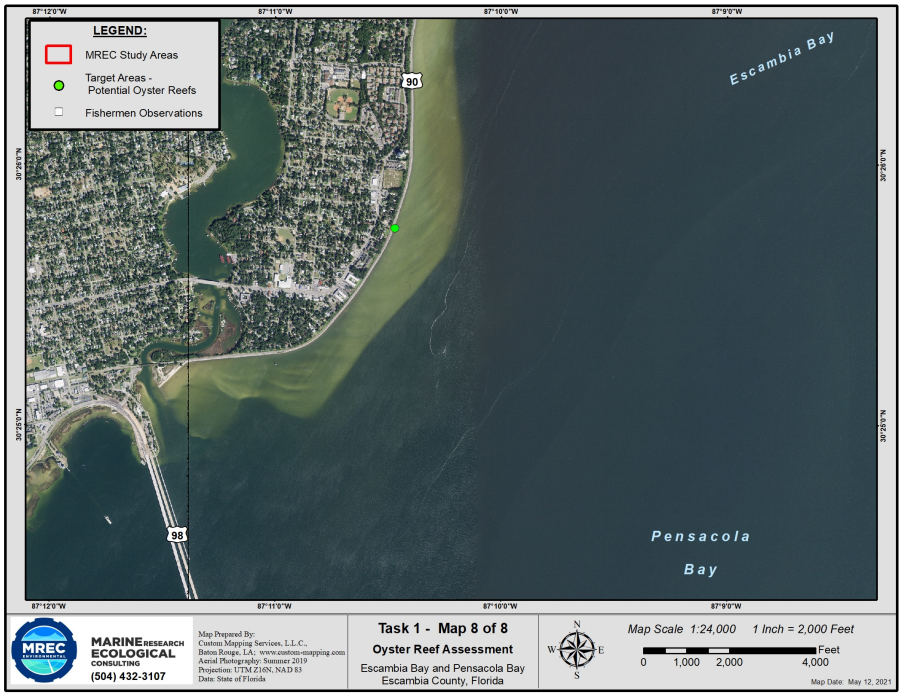


Figure 9. Task 1 - Map 8 of 8

SECTION 2 – GROUND TRUTHING

METHODS

Field investigations to ground truth the intertidal ground features were conducted during the survey in order to determine the consistency of the desktop review results. The investigation was conducted on 5/20/2021, in which two (PWC) were taken out to the 33-target area (AOI) locations. MREC researchers got in the water inspecting each location to determine whether or not the area consisted of live oyster material by looking through the present substrate. Each area was photographed, along with a written description of what was found.

PRODUCTS

- Coordinates corresponding to each numerically identified area of interest (AOI).
- Photograph of the each (AOI).
- Description of materials identified at each (AOI), presence of oyster materials.
- Date of the ground Truthing investigation.

RESULTS

Ground truthing confirmed that there is no live oyster material within the intertidal target areas. Most findings included rocks used for bulkhead material, submerged rock, and marsh grass. Photographs with corresponding descriptions and coordinates are found in figures 10-42.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***1***
County:	Escambia County	Latitude:	*30°27.2443'N*
Sample Date:	5/20/2021	Longitude:	*87°06.0241'W*

Notes

Oyster Presence:	No

No oysters were present at this site. Large piles of rocks used for bulkhead material, including submerged rocks, were identified at this location. The surrounding water bottom in this location was sandy.

Figure 10. Station 1.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***2***
County:	Escambia County	Latitude:	*30°27.3329'N*
Sample Date:	5/20/2021	Longitude:	*87°05.9881'W*

Notes

Oyster Presence:	No

No oysters were present at this site. Large piles of rocks used for bulkhead material, including submerged rocks, were identified at this location. The surrounding water bottom in this location was comprised of moderately firm mud/sand mix.

Figure 11. Station 2.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***3***
County:	Escambia County	Latitude:	*30°27.4911'N*
Sample Date:	5/20/2021	Longitude:	*87°05.9092'W*

Notes

Oyster Presence:	No

No oysters were present at this site. Large piles of rocks used for bulkhead material, including submerged rocks, were identified at this location. The surrounding water bottom in this location was comprised of moderately firm mud/sand mix.

Figure 12. Station 3.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***4***
County:	Escambia County	Latitude:	*30°27.5054'N*
Sample Date:	5/20/2021	Longitude:	*87°05.8982'W*

Notes

Oyster Presence:	No

No oysters were present at this site. Rocks used for bulkhead material, including submersed rocks and driftwood were visible from the surface, and miscellaneous debris on the water bottom were noted. The surrounding water bottom was sandy.

Figure 13. Station 4.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***5***
County:	Escambia County	Latitude:	*30°28.0361'N*
Sample Date:	5/20/2021	Longitude:	*87°05.7593'W*

Notes

Oyster Presence:	No

No oysters were present at site. Large piles of rocks, including some submerged rocks, were used for bulkhead material, were identified at this location. The surrounding water bottom was composed of sand and moderately firm mud/sand mix.

Figure 14. Station 5.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***6***
County:	Escambia County	Latitude:	*30°28.3024'N*
Sample Date:	5/20/2021	Longitude:	*87°05.7313'W*

Notes

Oyster Presence:	No

No oysters were present at this site. Large piles of rocks used for bulkhead material, including submerged rocks, were identified at this location. The surrounding water bottom in this location was comprised of moderately firm mud/sand mix.

Figure 15. Station 6.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***7***
County:	Escambia County	Latitude:	*30°28.4115'N*
Sample Date:	5/20/2021	Longitude:	*87°05.6645'W*

Notes

Oyster Presence:	No

No oysters were present at site. Large piles of rocks, including some submerged rocks, were used for bulkhead material, were identified at this location. The surrounding water bottom was composed of sand and moderately firm mud/sand mix.

Figure 16. Station 7.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***8***
County:	Escambia County	Latitude:	*30°30.0206'N*
Sample Date:	5/20/2021	Longitude:	*87°05.8576'W*

Notes

Oyster Presence:	No

No oysters were present at this site. Large piles of pieces of concrete used for bulkhead material, including submerged rocks, were identified at this location. The surrounding water bottom in this location was sandy.

Figure 17. Station 8.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***9***
County:	Escambia County	Latitude:	*30°30.0036'N*
Sample Date:	5/20/2021	Longitude:	*87°05.8600'W*

Notes

Oyster Presence:	No

No oysters were present at this site. Submerged rocks and grass were identified at this location.The surrounding water bottom consisted of a moderately firm sandy/mud mix.

Figure 18. Station 9.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***10***
County:	Escambia County	Latitude:	*30°30.2020'N*
Sample Date:	5/20/2021	Longitude:	*87°05.8062'W*

Notes

Oyster Presence:	No

No oysters were present at site. Large piles of rocks, including some submerged rocks, were used for bulkhead material, were identified at this location. The surrounding water bottom was composed of sand.

Figure 19. Station 10.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***11***
County:	Escambia County	Latitude:	30°30.8424'N
Sample Date:	5/20/2021	Longitude:	87°5.8798'W

Notes

Oyster Presence:	No

No oysters were present at site. Large piles of rocks, including some submerged rocks, were used for bulkhead material, were identified at this location. The surrounding water bottom was composed of sand.

Figure 20. Station 11.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***12***
County:	Escambia County	Latitude:	30°30.8680'N
Sample Date:	5/20/2021	Longitude:	87°5.8730'W

Notes

Oyster Presence:	No

No oysters were found in this location. Partially submerged marsh grass was noted to have been found on-site.

Figure 21. Station 12.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***13***
County:	Escambia County	Latitude:	30°31.2427'N
Sample Date:	5/20/2021	Longitude:	87°6.2362'W

Notes

Oyster Presence:	No

No oysters were found in this location. Partially submereged marsh grass and driftwood was noted to have been found on-site.

Figure 22. Station 13.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***14***
County:	Escambia County	Latitude:	30°31.5787'N
Sample Date:	5/20/2021	Longitude:	87°6.8735'W

Notes

Oyster Presence:	No

No oysters were found in this location. Partially submereged marsh grass was noted to have been found on-site.

Figure 23. Station 14.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***15***
County:	Escambia County	Latitude:	30°31.5416'N
Sample Date:	5/20/2021	Longitude:	87°6.7245'W

Notes

Oyster Presence:	No

No oysters were found in this location. Partially submereged marsh grass was noted to have been found on-site.

Figure 24. Station 15.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***16***
County:	Escambia County	Latitude:	30°31.8129'N
Sample Date:	5/20/2021	Longitude:	87°7.7086'W

Notes

Oyster Presence:	No

No oysters were found in this location. Partially submereged marsh grass and rocks was noted to have been found on-site.

Figure 25. Station 16.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***17***
County:	Escambia County	Latitude:	30°31.9051'N
Sample Date:	5/20/2021	Longitude:	87°7.7777'W

Notes

Oyster Presence:	No

No oysters were found in this location. Partially submereged marsh grass was noted to have been found on-site.

Figure 26. Station 17.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***18***
County:	Escambia County	Latitude:	30°32.5169'N
Sample Date:	5/20/2021	Longitude:	87°10.8180'W

Notes

Oyster Presence:	No

No oysters were found in this location. Partially submereged marsh grass and rocks was noted to have been found on-site.

Figure 27. Station 18.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***19***
County:	Escambia County	Latitude:	30°32.3762'N
Sample Date:	5/20/2021	Longitude:	87°11.2795'W

Notes

Oyster Presence:	No

No oysters were found in this location. Partially submereged marsh grass was noted to have been found on-site.

Figure 28. Station 19.

Intertidal Oyster Investigation

Escambia Bay		***Station***	***20***
County:	Escambia County	Latitude:	30°32.2588'N
Sample Date:	5/20/2021	Longitude:	87°11.3245'W

Notes

Oyster Presence:	No

No oysters were found in this location. Partially submereged marsh grass was noted to have been found on-site.

Figure 29. Station 20.

Intertidal Oyster Investigation

Escambia Bay		***Station***	***21***
County:	Escambia County	Latitude:	30°31.9556'N
Sample Date:	5/20/2021	Longitude:	87°11.3232'W

Notes

Oyster Presence:	No

No oysters were present at site. Large piles of rocks, including some submerged rocks, were used for bulkhead material, were identified at this location. The surrounding water bottom was composed of sand.

Figure 30. Station 21.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***22***
County:	Escambia County	Latitude:	30°30.9974'N
Sample Date:	5/20/2021	Longitude:	87°9.8881'W

Notes

Oyster Presence:	No

No oysters were present at site. Rocks and driftwood was noted to have been found on-site.

Figure 31. Station 22.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***23***
County:	Escambia County	Latitude:	30°28.1519'N
Sample Date:	5/20/2021	Longitude:	87°9.6073'W

Notes

Oyster Presence: No

No oysters were present at site. Large piles of rocks, including some submerged rocks, were used for bulkhead material, were identified at this location. The surrounding water bottom was composed of sand.

Figure 32. Station 23.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***24***
County:	Escambia County	Latitude:	30°28.1407'N
Sample Date:	5/20/2021	Longitude:	87°9.6146'W

Notes

Oyster Presence:	No

No oysters were present at site. Submerged rocks and sandy shorelines were found on-site.

Figure 33. Station 24.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***25***
County:	Escambia County	Latitude:	30°28.1141'N
Sample Date:	5/20/2021	Longitude:	87°9.6298'W

Notes

Oyster Presence:	No

No oysters present at site. Portions of driftwood were found on-site.

Figure 34. Station 25.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***26***
County:	Escambia County	Latitude:	30°27.8175'N
Sample Date:	5/20/2021	Longitude:	87°9.7269'W

Notes

Oyster Presence:	No

No oysters were present at site. Submerged rocks was noted to be on-site.

Figure 35. Station 26.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***27***
County:	Escambia County	Latitude:	30°27.7766'N
Sample Date:	5/20/2021	Longitude:	87°9.7558'W

Notes

Oyster Presence:	No

No oysters were present at site. Large piles of rocks, including some submerged rocks, were used for bulkhead material, were identified at this location. The surrounding water bottom was composed of sand.

Figure 36. Station 27.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***28***
County:	Escambia County	Latitude:	30°25.7565'N
Sample Date:	5/20/2021	Longitude:	87°10.4692'W

Notes

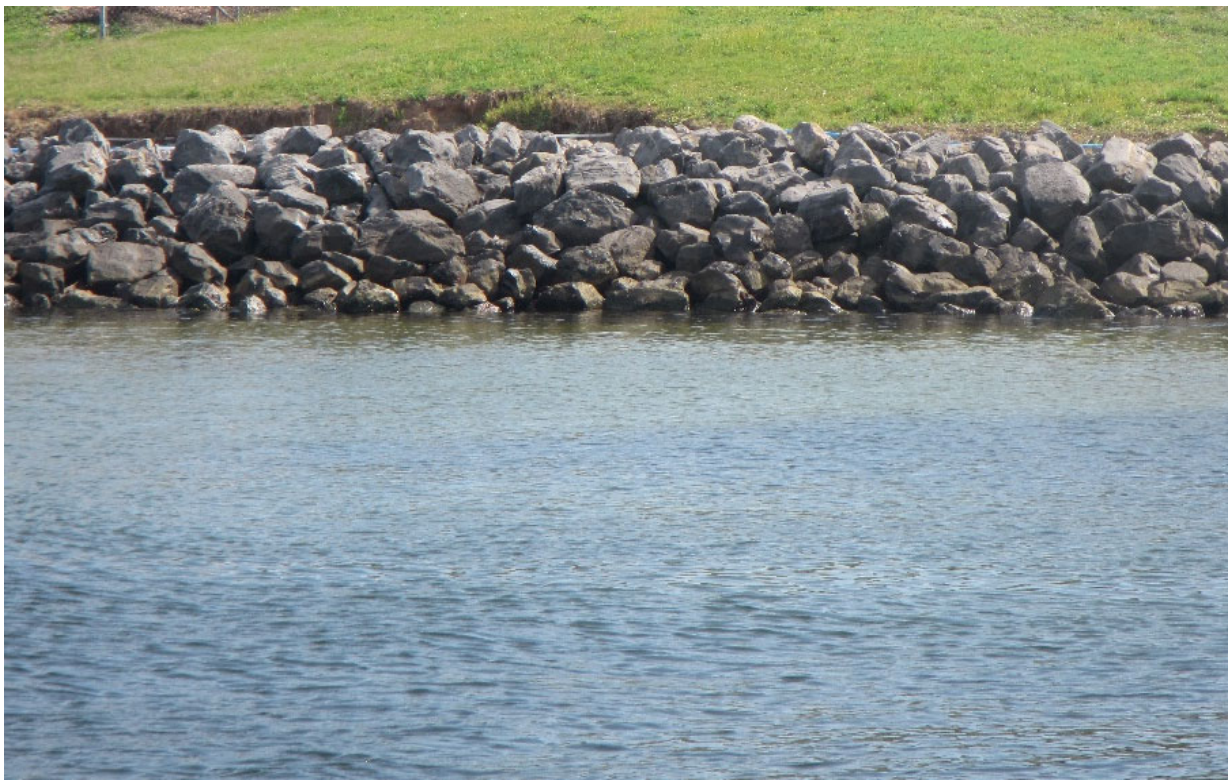
Oyster Presence:	No

No oysters were present at site. Large piles of rocks, including some submerged rocks, were used for bulkhead material, were identified at this location. The surrounding water bottom was composed of sand.

Figure 37. Station 28.

Intertidal Oyster Investigation

Escambia Bay		***Station:***	***29***
County:	Escambia County	Latitude:	30°22.4610'N
Sample Date:	5/20/2021	Longitude:	87°10.6176'W



Notes

Oyster Presence:	No

No oysters were present at site. Large piles of rocks, including some submerged rocks, were used for bulkhead material, were identified at this location. The surrounding water bottom was composed of sand.

Figure 38. Station 29.

Intertidal Oyster Investigation

Pensacola Bay		***Station:***	***30***
County:	Escambia County	Latitude:	*30°22.4219'N*
Sample Date:	5/20/2021	Longitude:	*87°10.5728'W*

Notes

Oyster Presence:	No

No oysters were present at this site. Large piles of pieces of rocks used for bulkhead material, including submerged rocks, were identified at this location. The surrounding water bottom in this location was sandy.

Figure 39. Station 30.

Intertidal Oyster Investigation

Pensacola Bay		***Station:***	***31***
County:	Escambia County	Latitude:	*30°22.8491'N*
Sample Date:	5/20/2021	Longitude:	*87°08.0508'W*

Notes

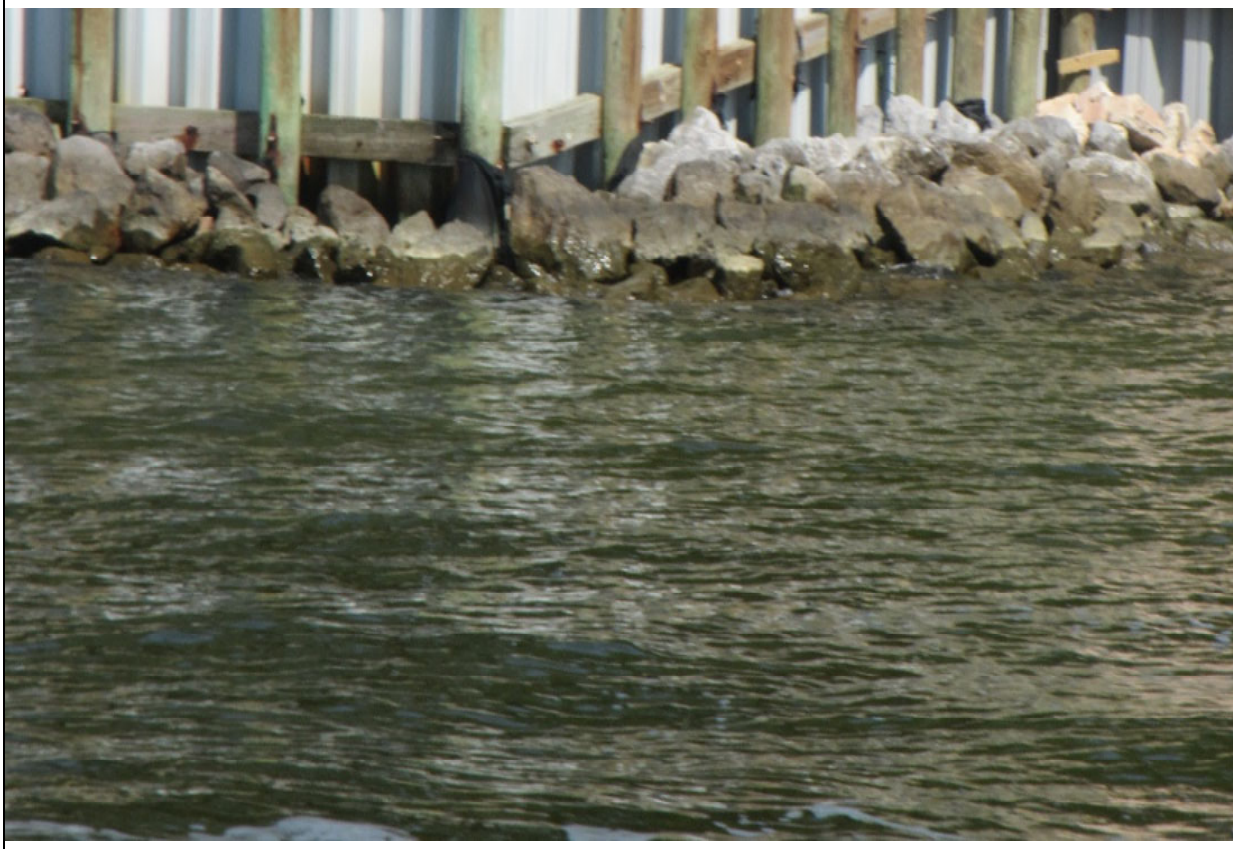
Oyster Presence:	No

No oysters were present at this site. Large piles of pieces of rocks used for bulkhead material, including submerged rocks, were identified at this location. The surrounding water bottom in this location was sandy.

Figure 40. Station 31.

Intertidal Oyster Investigation

Pensacola Bay		***Station:***	***32***
County:	Escambia County	Latitude:	*30°22.9132'N*
Sample Date:	5/20/2021	Longitude:	*87°07.9403'W*



Notes

Oyster Presence:	No

No oysters were present at this site. Large piles of pieces of rocks used for bulkhead material, including submerged rocks, were identified at this location. The surrounding water bottom in this location was sandy.

Figure 41. Station 32.

Intertidal Oyster Investigation

Pensacola Bay		***Station:***	***33***
County:	Escambia County	Latitude:	*30°23.9597'N*
Sample Date:	5/20/2021	Longitude:	*87°04.6291'W*

Notes

Oyster Presence:	No

No oysters were present at this site. Large piles of submerged rocks were identified at this location. The surrounding water bottom in this location was sandy.

Figure 42. Station 33.

SECTION 3 – ASSESSMENT

There were a few AOIs that contained rocks or other substrates that could potentially bear oysters, though no AOI contained any sign of actual oyster presence. As such, no oyster standing stock assessments were performed on any of the intertidal zones.

CONCLUSION

Initial satellite imagery indicated 33 AOI, which could possibly have live oysters present. After determining those AOI, in water ground truthing indicated that the majority of the AOI present in the imagery were submerged rocks and other bulkhead debris, and marsh grass. None of the AOI assessed were found to contain any live oyster populations; therefor the intertidal zone of Escambia Bay can be said to contain no standing stock of oysters.

Submitted by:

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