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Mr. David M. Bear, Chair
Triumph Gulf Coast Inc.
PO Box 12007
Tallahassee
FL 32317

April 29, 2024

Dear Chairman Bear,

Please find attached, the fourth annual report for the Apalachicola Bay System Initiative (ABSI) awarded to Florida State University on March 15, 2019. The reporting period for this report is March 15, 2023 to March 14, 2024. As you are aware, an amendment to this project was approved by the Board on April 10, 2024, extending the end date to December 31, 2025. The attached report includes a brief summary of project accomplishments to date and a description of the workplan for the remainder of the project.

Please let me know if you have any questions or require additional information

Sincerely,

Sandra Brooke

Sandra Brooke Ph.D.,
Full Research Faculty and ABSI Project Lead
Florida State University Coastal and Marine Lab

ANNUAL REPORT TO TRIUMPH GULF COAST INC.

Project #69: Apalachicola Bay System Initiative (ABSI)
Awardee: Florida State University
Reporting Period: March 15, 2023-March 15, 2024

Since the project inception in March 2019, five of the nine ABSI objectives have been completed, while others are either continuous (i.e. will continue for the life of the project) or are ongoing as there are elements of these tasks that are still to be completed. The reasons for the latter are in part due to the Covid restrictions during the critical early phases of the project. There were delays in hiring staff and initiating construction planning for the shellfish hatchery. In addition, there were restrictions on field work and laboratory processing throughout 2020, which slowed the progress of understanding the status of the oyster populations and designing restoration experiments. Despite these delays, we have not yet requested a time extension on this project.

Other challenges were encountered with the temporary shellfish hatchery (a small greenhouse that lacked adequate temperature control) and water quality issues, which have since been resolved. The permanent hatchery was completed in early 2023 and we produced oyster juveniles for restoration. Unfortunately, the severely depleted status of the oyster reefs in Apalachicola Bay did not provide an appropriate test substrate for the 'proof of concept' of this approach and our experiments were inconclusive. In Spring 2024, the Florida Fish and Wildlife Commission will be deploying over 60 acres of limestone material as part of their Apalachicola Bay restoration effort. This material will provide a stable test bed that will allow us to evaluate the efficacy of using hatchery juveniles for oyster population recovery. A summary list of the status of ABSI deliverables is below, and more information can be found in the project Annual Reports on the FSUCML ABSI website[1].

Summary of status of ABSI deliverables

- Assess temporal and spatial changes in the status of oyster communities: ***Complete***
- Construct a pilot scale oyster hatchery: ***Complete***
- Create a Bio-physical Model: ***Complete***
- Analyze oyster population genetic structure: ***Complete***
- Develop a Management and Restoration Plan for the ABS: ***Complete***
- Monitor oyster communities and their environment: ***Continuous***
- Conduct targeted outreach to the community: ***Continuous***
- Conduct Experimental Ecology Studies: ***Ongoing***
- Create a Coupled Ecosystem-Life History Model: ***Ongoing***

In March 2024, the ABSI leadership requested a project amendment to extend the end date to December 31 2024, and re-budget the remaining funds to accommodate the work planned during the extension. The amendment was approved by the Triumph Gulf Coast Board on April 10, 2024. The requested time extension of 18 months will allow us to complete the remaining deliverables and take advantage of opportunities to enhance the outcomes of our ongoing work. Work proposed during the extension period is detailed in **Appendix 1**

1 https://marinelab.fsu.edu/absi/

The fully executed ABSI Grant Award Agreement included a performance metric (8.3c) that stipulated provision of assistance and support to local business that were affected by the oyster population decline. In addition to Covid restrictions throughout 2020, our progress on business engagement was further limited by the continued decline and subsequent closure of the oyster fishery at the end of 2020. Many harvesters had moved on to other fisheries or occupations after the oyster collapse, and uncertainty remains as to when, or whether, oyster populations will recover sufficiently to support a commercially viable fishery. The Apalachicola Bay oyster fishery was declared a Federal Fishery Disaster in 2013 and millions of dollars were spent on oyster restoration. Despite this investment, oyster populations continued to decline and in 2020 the fishery was closed for five years to allow populations to recover.

Restoration research conducted by ABSI developed improved restoration designs that have supported oyster recruitment and growth and provided a better understanding of optimal restoration elements: stability, persistence, reef height and predator refuge. The ABSI restoration approach has been adopted by the Florida Fish and Wildlife Commission for their large scale 2024 restoration project (~ 90 acres). Because of these improved restoration methods, there is reason for optimism that the oysters could recover sufficiently to support a fishery. Since the oyster fishery collapse, Franklin County has shifted more towards tourism and away from its traditional fisheries-dependent economy, and oyster aquaculture has expanded to help fill market demand for Apalachicola oysters.

We have engaged the Florida State University Jim Moran College of Entrepreneurship to address ABSI performance metric (8.3c), and work with the Franklin County community to re-invigorate the traditional working waterfront culture and economy. **Appendix 2** provides details of their proposal, which is designed to be completed within he requested 18-month time extension.

APPENDIX 1

Completion of remaining ABSI deliverables during the extension period (June 25th, 2024-December 31st, 2025)

1. Monitor oyster communities and their environment.

For the past three years, ABSI has conducted bay-wide subtidal oyster population surveys using hand tongs through collaboration with a local oyster harvester. These tong surveys are quicker and less weather dependent than the diver surveys used by FDEP and FWC. They can be processed more rapidly and do not require trained divers. Samples are collected and either processed immediately on the vessel, or if the samples are large, they are brought to the ABSI laboratory, processed, and taken back to the Bay alive within a week of sampling. We are in the process of preparing a publication on ABSI (2020-2023) tonging data which documents spatial and temporal conditions in oyster populations across the Bay since the fishery closed in December 2020.

In spring 2024, we will focus on intensive sampling of the limited locations in the Bay that support oysters (those planted with limerock in 2016 and 2021), with the goal of collecting high resolution data on oyster population distributions at these sites. The proposed extension will enable us to collect, analyze data and prepare a technical report on the status of oysters in the Bay. These data will be made available to the public and resource management agencies to inform fishery management decisions.

In spring 2024, the FWC will be conducting a pilot project that will deploy 30 one-acre limerock reefs (26 for FWC, four for ABSI) and ~ 60 acres of low relief (~ 6 inches) limerock restoration areas. The FWC will monitor their deployments using divers but will primarily focus on the smaller reefs. During the proposed extension, we will survey the 2024 FWC larger low relief restoration areas, in fall 2024 and spring and fall 2025 to supplement the FWC monitoring data and provide additional information on oyster populations on the newly restored habitat.

2. Conduct targeted outreach to the community.

Community outreach has always been a major component of ABSI, with a dedicated web presence[2] within the FSUCML website. The ABSI outreach will continue for the duration of the project through social media, web-based information, and in-person representation at festivals and other events in Franklin and Wakulla Counties. Science updates will continue at Franklin County and City Commission meetings and other civic groups as needed.

3. Continue experimental ecology studies.

This category includes most of the research conducted under ABSI, the details of which are in the annual reports on the ABSI research webpage[3]. Some of the research is thematic (e.g. system ecology, disease dynamics, restoration ecology) and will continue beyond the life of ABSI with support from FSU and external funding. Other projects have specific end points, particularly the graduate student research. Of the nine students working on ABSI projects, six are expected to graduate after the current scheduled ABSI end date. An extension and budget revision of the ABSI funds will support graduate student fieldwork, sample processing, and data analysis for an additional 18 months, allowing them to maintain productivity, publish their research and participate in public presentations and outreach.

2 https://marinelab.fsu.edu/absi/

3 https://marinelab.fsu.edu/absi/research/

In addition, there are three focal areas of research that will be completed during the extension period.

a. ***Assess the value of hatchery oysters in population recovery***: The ABSI hatchery has produced spat on shell and seed for experiments to determine the efficacy of using this approach to enhance oyster population recovery; however, these have been marginally successful because the substrate in the Bay is unstable, and our experiments were buried and/or lost. The FWC has provided ABSI with exclusive use of four acres of high relief (12 inches) reefs and access to the larger low relief (6 inches) areas to conduct experiments and continue monitoring oyster populations on restored areas across the Bay. The new reefs will provide stable substrate for evaluating the use of spat-on-shell for restoration and conducting other experiments using hatchery oysters.

b. ***Develop framework for Apalachicola Bay Report Card***: Part of the ABSI mission is to understand the overall health of the Apalachicola Bay System. Although several research projects address elements of this question, we have not taken a holistic approach to this complex issue. Members of the Franklin County Commission have requested a routinely updated index to track the condition of the Bay, so during the ABSI extension, we will develop the framework for an ecosystem "Report Card" for the ABS. Creation of ecological Report Cards has been applied to restored and recovering estuaries to assign objective measures of health. Dr. Breithaupt (ABSI faculty) will conduct a local to global review of coastal report cards to identify: 1) the variables that are tracked, 2) the stakeholders and process involved in deciding on a variables that are meaningful to each ecosystem, 3) the data collection entities, 4) the frequency of Report Card production, 5) the spatial and temporal resolution of the reporting units, and 6) the logistical processes of collecting, standardizing, and evaluating the data in a way that can be understood by stakeholders. A secondary part of the report will evaluate how many of these data types are already collected for Apalachicola Bay and identify data gaps. Deliverables will be a review of Report Card creation processes and a road map for implementing an ecological report card for the Apalachicola Bay System. The review will help the new community stakeholder group, the Partners for a Resilient Apalachicola Bay, to implement a regional Report Card. This tool will help evaluate the ecological, economic, and cultural well-being of the ABS.

c. ***Shell recycling for reef replenishment***: Reef replenishment using natural shell is a traditional component of oyster fishery management and essential to habitat maintenance under harvest. The Apalachicola Bay shell retention and replenishment program closed in 2011 and has not been replaced. Shell recycling programs in other areas have replaced government funded programs and generated significant and sustained funding streams that provide employment (including creation of new businesses) and material for oyster reef restoration. A small shell recycling program (OYSTER: Offer Your Shells To Enhance Restoration) is operated through Franklins Promise OysterCorps[4] program and reclaims shells from 2-3 area restaurants. This program has the potential to generate additional jobs for Franklin County youth and replace, in part, the previous reef replenishment program. A recent review of shell recycling programs[5] identified several strategies to increase the capacity of this program, engage and retain more

4 https://franklinspromisecoalition.wildapricot.org/page-18183

5 https://marinelab.fsu.edu/absi/research/oyster-shell-recycling-review/

restaurants and encourage the public to recycle their shells. We will work with the OysterCorps during the proposed extension period to support and enhance their recycling efforts, and to help obtain additional funding to maintain and expand the program.

4. Create a Coupled Ecosystem-Life History Model.

Three models have been or are being developed by ABSI: 1) freshwater flow, 2) bio-physical and 3) habitat suitability. Aspects of these models have been incorporated into the others as where appropriate; for example, the freshwater model informs the hydrodynamic model, which incorporates ABSI oyster physiology data to create a larval dispersal model. Outputs from the combined models will be used in the oyster habitat suitability model, which is the focus of a Ph.D. student dissertation.

An oyster population model developed by our collaborator Dr. Ed Camp (University of Florida) was developed to model management strategies as requested by the ABSI Community Advisory Board. Dr. Fabio Caltabellotta (ABSI Postdoc) developed a decision support tool that can be used through cell phones and computers. This tool uses Dr. Camps' model to develop a user-friendly public interface that will allow resource managers and the public to explore the effects of different management strategies on oyster populations in the Bay. This application was incomplete when Dr. Caltabellotta left for a permanent position. Dr. Camp has agreed to finish this project so the app is widely available to the public. This tool will be invaluable as the restoration process unfolds and the need for mid-stream adjustments in management strategies arise.

FLORIDA STATE UNIVERSITY
JIM MORAN COLLEGE OF ENTREPRENEURSHIP

APPENDIX 2

Economic Revitalization Programs for Franklin County

The Jim Moran College of Entrepreneurship at Florida State University is excited to propose a comprehensive plan to support the Franklin County community and the restoration of its oyster fishing industry through entrepreneurial capacity building, upskilling, and economic development. In considering the unique challenges this community has faced from the crash of the Apalachicola Bay, we believe an approach that fosters resilience and focuses on the power of entrepreneurship to revitalize and transform communities, aligns well with the community's needs.

Our approach leverages the collective expertise of both the Jim Moran College of Entrepreneurship (JMC) and the Jim Moran Institute for Global Entrepreneurship (JMI) through customizing two of our signature programs to address Franklin County's unique situation.

The first program, Accelerate Franklin, focuses on nascent entrepreneurs looking to take existing idea-stage, micro- and small- ventures and build them into sustainable ventures. This 9-month program uses a cohort model to offer participants hands-on learning, access to vetted, qualified mentors, and access to a national community of other aspiring entrepreneurs. The program can serve small established fishing operations as well as other community members interested in starting new ventures relating to the area's oyster heritage and the commercial potential a restored Apalachicola Bay provides, broadly defined.

Accelerate Franklin is based on a proven, science-backed model vetted by the University of Notre Dame that is presently operating in 25+ cities of economic need across the nation (Cleveland, OH; Lafayette, LA; Gainesville, FL; Baton Rouge, LA; and soon to be in Tallahassee, FL). The program focuses primarily on helping entrepreneurs accomplish a pre-defined set of more than 80 proven entrepreneurial action steps, bringing a bootcamp training, 1:1 mentorship and small group learning opportunities directly into the community.

The second program, Small Business Executive Program for Franklin County (SBEP), was carefully designed to accommodate the busy schedule of established small business owners (typically those 3+ years in business with 3+ employees). The SBEP is ideal for CEOs, founders, entrepreneurs, presidents of small businesses, and immediate successors of businesses. The SBEP is presently offered annually in Tallahassee, Ft. Lauderdale, Jacksonville, Tampa, and Orlando, and we believe it would be a great addition to serve the more established small businesses operating in and around Franklin County. Past SBEP participants note they emerge as stronger leaders ready to capitalize on business opportunities, implement best practice management, and turn challenges into strategic advantages.

When working with new community partners, we typically begin with a 90-day community engagement period, during which we meet with key stakeholders and conduct community focus

groups to understand the community landscape more fully. Then, in a bespoke way, we customize each of the programs to align with the community needs, developing a timeline and implementation strategy for these programs that is specific to that context. A foundation part of our approach would be to work closely with the Partnership for the Restoration of Apalachicola Bay (PRAB) to weave the of Accelerate Franklin and SBEP into the economic and workforce development stakeholder action items of the Apalachicola Bay System Ecosystem-Based Adaptive Restoration and Management Plan ("the Plan").

In terms of measurable outcomes, typical cohorts for both programs run for 4-months and consist of 8-18 participants. We have run cohorts as small as 4 participants when necessary, and larger cohorts are also viable, though the larger the group the less we can individualize program mentorship.

Upon completion of these programs, participants receive certificates of completion specific to each program and are invited to join established networks of alumni from our prior programs. For the SBEP program, we are in the process of developing a robust, virtual community platform to amplify alumni company collaboration across the state (including existing alumni in the oyster and fishing industries). Accelerate Franklin program alumni join a national network of growth-oriented small businesses from a diverse array of industries. They are eligible to apply for existing small seed funding grants through our national network (e.g., presently the network had seed funding support provided by the Coca Cola Foundation) and compete in other recognition programs through our partnership with the University of Notre Dame.

Ultimately, we believe the Accelerate Franklin and SBEP programs will help facilitate the revitalization of the entrepreneurial ecosystem in Franklin County in support of the Goal E objectives of the Plan, and at the same time enable the integration of these small business owners and entrepreneurs in the regional entrepreneurial ecosystem in the region of Northwest Florida.

About the Jim Moran College of Entrepreneurship
The mission of the Jim Moran College of Entrepreneurship (JMC) is to inspire innovation, instill compassion and ignite an entrepreneurial mindset in the next generation of leaders. The JMC is the home to FSU's academic entrepreneurship programs (bachelors, masters, and certificates), a team of world-class entrepreneurship researchers and award-winning entrepreneurship educators, and the Jim Moran Institute for Global Entrepreneurship.

About the Jim Moran Institute for Global Entrepreneurship
The mission of the Jim Moran Institute for Global Entrepreneurship is to cultivate, train and inspire entrepreneurial leaders through world-class executive education, applied training, public recognition, and leading-edge research. The Jim Moran Institute comprises a dedicated team of entrepreneurship professionals, academic scholars and staff who foster the entrepreneurial spirit by helping to organize, expand and promote the knowledge and practice of entrepreneurship in such a way as to facilitate new business and further the goals of established businesses.

Budget: $200,000
The cost of this work will be covered by existing ABSI funds and is based on operating both programs annually for 18 months (e.g., two cohorts of each program). This includes conducting initial community meetings and focus groups, customizing the programs to address unique aspects of the community, building a mentor network of qualified, vetted mentors to support program participants, and connecting participants to alumni programs and networks upon program completion.