Board of County Commissioners

State of Florida

March 20, 2018

Honorable Don Gaetz, Chairman
Triumph Gulf Coast, Inc.
Attn: Susan Skelton, Executive Director
P.O. Box 12007
Tallahassee, FL 32317

RE: Okaloosa County Project Application-Northern Gulf of Mexico Fish Aggregating Device (FAD) Network

Dear Mr. President:

Please find the enclosed application for the above project. This project has been approved by the Board of County Commissioners (Board) for official submission to Triumph Gulf Coast, Inc. and is hereby presented for your consideration.

The Board appreciates your service and commitment to the statutory mission of Triumph, and your thoughtful project deliberations as our long-term partner in providing economic recovery, diversification and enhancement of the eight disproportionately affected counties.

Recognizing Triumph's goal to leverage available funds for transformational projects within impacted communities, the County is providing this project submission as the follow-up for the initial pre-application previously approved. Having carefully evaluated the benefits to the local economy, already having expended over $136,101 of County funds and committed Gulf Consortium Pot 3 allocation dollars of $500,000.00, the Triumph match of $500,000.00 requested will bring the program into completion.

Thank you in advance for your consideration of the above-mentioned project. Should you have any questions or need further information, please contact Jane Evans, Grants and Restore Manager at (850)651-7521 or jevans@co.okaloosa.fl.us.

Sincerely,

Commissioner Graham W. Fountain
Chairman

302 N. Wilson St • Crestview, FL 32536 • (850) 689-5030 • Fax: 689-5059

1250 N. Eglin Pkwy, Suite 100 • Shalimar, FL 32579 • (850) 651-7105 • Fax: 651-7142

TRIUMPH GULF COAST, INC.
FUNDING PROPOSAL

NORTHERN GULF OF MEXICO FISH AGGREGATING DEVICE (FAD) NETWORK

(Reference: #44 Pre-application)

Application submitted by
Okaloosa County Board of County Commissioners

March 2018

Applicant Information

1. Name of Entity/Organization: Okaloosa County Board of County Commissioners

2. Background of Applicant Individual/Entity/Organization:

   Okaloosa became the 52nd county in Florida on September 7, 1915 and was created from part of Santa Rosa and Walton Counties. The purpose of Okaloosa County Government is to be responsive to citizens in providing an appropriate level of accessible services on a cost-effective basis. Critical County values include the following: continual improvement of infrastructure; health safety, and well-being of the citizens; preservation of natural resources; responsible economic development; leadership; and stewardship.

   Retrieved from https://www.co.okaloosa.fl.us/

3. Federal Employer Identification Number: 59-6000765
4. Contact Information:

   Primary Contact Information: Jane Evans

   Title: Grants & RESTORE Manager

   Mailing Address: 1250 North Eglin Parkway, Suite 102

   Shalimar, FL 32579

   Phone: 850-651-7521

   Email: jevans@co.okaloosa.fl.us

   Website: www.myokaloosa.com

5. Total amount of funding requested from Triumph Gulf Coast: **$500,000**

6. Has the applicant in the past requested or applied for funds for all or part of the proposed project/program?

   Yes

   If yes, please provide detailed information concerning the prior request for funding.

   Okaloosa County applied for 100% matching funds in the amount of $500,000 from RESTORE Gulf Consortium found in the draft State Expenditure Plan (SEP) for Spill Impact component, (estimated pot 3 allocation) in January 2018 and is currently under review. Okaloosa County is

hopeful that the requested funds will be awarded and coupled with Triumph Gulf Coast, Inc. Funds will completely fund the installation, monitoring and maintenance of the first Fish Attracting Device network in the region. Additional funding and timeline information can be found in the attached Economic Impact Report.

7. Describe the financial status of the applicant and any co-applicants or partners:

   Please find the 2016 Comprehensive Annual Financial Reports (CAFR) at the Okaloosa County website, http://www.co.okaloosa.fl.us/bcc/budget. The 2017 report will be posted at this site when available.

8. Has the applicant or any co-applicants, partners or any associated or affiliated entities or individuals filed for bankruptcy in the last ten (10) years?

   No

Eligibility

1. From the choices below, please check the box that describes the purpose of the proposed project or program (check all that apply):

   ☒ Public infrastructure projects for construction, expansion, or maintenance which are shown to enhance economic recovery, diversification, and enhancement of the disproportionately affected counties;

2. Provide the title and a detailed description of the proposed project or program, including the location of the proposed project or program, a detailed description of, and quantitative evidence demonstrating how the proposed project or program will promote economic recovery, diversification, and enhancement of the disproportionately affected counties, a proposed timeline for the proposed project or program, and the disproportionately affected counties that will be impacted by the proposed project or program.

a. Project Title:

Northern Gulf of Mexico Fish Aggregating Device (FAD) Network

b. Project Manager:

Alex Fogg – Marine Resource Coordinator
Okaloosa County Tourist Development Department
(850) 609-5394
afogg@co.okaloosa.fl.us

c. Project Description & Location:

Okaloosa County proposes to deploy approximately eight large mooring buoys also known as Fish Aggregating Devices (FADs) to attract and provide pelagic habitat for highly prized pelagic

game fish such as Marlin, Tuna, Mahi Mahi, and Wahoo just to name a few. This network of FADs will expand and increase access of this fishery to fishing entities located across the Northeastern Gulf of Mexico which encompasses the eight disproportionally affected Florida counties from the Deepwater Horizon Oil spill as well as the states of Alabama and Mississippi. Additionally, this FAD system will provide habitat to a number of fish species that may have been directly affected by the oil spill. The main purpose of deploying this network is to develop and deploy the necessary infrastructure to expand and enhance recreational and sport fishing opportunities across the region which will result in a significant economic impact to not only the fishing industry in the region but to regional tourism. The current purposed placement of the buoys was a collaborative effort to ensure ecological qualities, legal constraints, and public interests were not omitted.

Anchored FADs are present around many Caribbean islands, Guam, West Indian Ocean islands, Australia, New Guinea…etc.; however, very few FADs occur in American waters and none have been deployed in the Gulf of Mexico. FADs are a very old technology, the use of buoys and other floating objects to attract fish and has garnered a great deal of interest especially to those groups participating in pelagic fisheries. The islands of Hawaii have an extensive anchored FAD system for recreational uses, in place for over 30 years and is the only currently active FAD system in the United States. Given the lack of documented FAD systems within the United States and the limited information available in other regions where FADs exist, the Hawaii program serves as a model for developing this project in the northeastern Gulf of Mexico.

d. Economic Recovery, Diversification and Enhancement Description:

A recent Economic Impact Report (attached) funded by Okaloosa County, suggested that over the lifespan of the initially deployed FAD network (estimated 7-year period) it is estimated it will support 368 jobs, create nearly $56 million in economic impact, and generate over $2.6 million in government revenues (fiscal impact) across the 8-county region of Northwest Florida alone.

What was not considered in this Economic Impact Report was the potential for increased visitation to northwest Florida for potential high dollar billfish tournaments and marina construction or modifications to support larger offshore pelagic fishing vessels. Therefore, the estimated economic impact is likely underestimated. Continued benefits from the deployment of this FAD network will be the collaboration with national and international universities and scientists to conduct required monitoring activities at these buoy locations. Offshore research is costly and when opportunities to couple initiatives among projects presents itself, mutually beneficial results can be achieved. For this project, monitoring the human use or visitation of these FADs will be important information to provide to fisheries managers. Additionally, these FAD buoys will provide a permanent, stable platform for above and sub-surface oceanographic and atmospheric equipment. This equipment can be installed to monitor synoptic oceanographic and meteorological conditions in the area and potentially provide real time data to the public which will be used to make safe and educated decisions about planning offshore, relatively long-range fishing trips. Additional equipment can also be installed to monitor biological conditions and even affix devices to detect and track movements of specific species of interest. Specifically, a collaboration with the Institute for Human & Machine Cognition located in Escambia County will incorporate initiatives from their Triumph Gulf Coast, Inc. funding proposal with this proposed FAD network to maximize the funding reach and benefits to the region.

In conclusion this unique FAD network will create 368 jobs, and generate nearly $56 million in economic impact across the 8-county region of Northwest Florida while providing the region with enhanced pelagic sport fishing and other recreational fishing opportunities. This network will

also provide collaboration opportunities with universities and scientists who would not have been able to conduct monitoring activities in the region otherwise. This project is ready to be implemented and if funded, delays in project implementation due to planning are unlikely and execution of this project will be immediate. Additional details can be found in the attached Feasibility Study and Economic Impact Report.

e. Proposed Project Timeline:

Currently, the proposed FAD network project is in year four of implementation as outlined in table 14 of the attached Economic Impact Report. Assuming the proposed FAD network is positively reviewed and funding is awarded in 2018:

- Construction and deployment will begin in year five (2019)
- Request for Proposal development and Advertisement (3 months)
- Construction of FAD buoys and anchoring systems (6 months)
- Deployment of FAD system (3 months allowing for weather)

Monitoring and maintenance activities will begin immediately after installation and the proposed funding will allow for monitoring efforts to continue until year eleven (2025) with monitoring and maintenance activities occurring annually (at a minimum).

3. Explain how the proposed project or program is considered transformational and how it will effect the disproportionately affected counties in the next ten (10) years.

The Fish Attracting Device (FAD) network proposed would be the first project of its kind in the Continental United States. This project will provide the infrastructure needed to increase recreational sport fishing opportunities for Okaloosa County and the buoys will be utilized by all northern Gulf of Mexico fishermen (recreational and commercial) spanning an even greater area than the eight disproportionally affected counties. This project will also transform the region, specifically Okaloosa County from a community that targets primarily reef fish species to a community that will access the pelagic fishery that is to be created with the installation of the proposed FAD network. Diversifying the fishing activities in the region will reduce the pressure on reef fish species and reduce user conflict. Additionally it will increase the number of jobs (i.e. charter operations) in the region that would otherwise be located in other locations where targeting pelagic fish would be more feasible. See the attached Economic Impact Report and Feasibility Study for more detailed information.

4. Describe data or information available to demonstrate the viability of the proposed project or program.

An in depth Feasibility Study and Economic Impact Report were completed specifically for this project and have been attached. Project permitting and planning has been completed or is nearing completion and if funds are awarded, this project will be ready for implementation immediately.

5. Describe how the impacts to the disproportionately affected counties will be measured long term.

The attached Economic Impact Report has a section discussing this. Return on Investment (ROI) is an important metric to consider and the estimated ROI is reported for seven years following the

installation of this FAD system. Job creation and number of visitors to the FAD system are also important measurements for project success.

6. Describe how the proposed project or program is sustainable. (Note: Sustainable means how the proposed project or program will remain financially viable and continue to perform in the long-term after Triumph Gulf Coast, Inc. funding.)

   Multiple funding models are discussed in the attached Economic Impact Report. Specifically, multiple (n=4) possibilities are outlined. While this does not represent all possible funding options post Triumph Gulf Coast, Inc. funding, this represents an outline for acquiring additional funds to maintain and monitor the proposed FAD network as well as potentially expand the network to additional locations. The cost for monitoring and maintenance is minimal and can be supported with minimal contributions from the 8-county region. The Economic Impact Report provides evidence that the project will be self-sustaining, following its implementation (and Triumph Gulf Coast, Inc. funds).

7. Describe how the deliverables for the proposed project or program will be measured.

   The goals of this project are to construct and deploy the infrastructure necessary to diversify the fishing opportunities offshore Okaloosa County as well as increase visitation and use of an area and fishery that has been underexplored in the past. Post construction, the number of new or relocated (to Okaloosa County) fishing operations, specifically targeting pelagic fish, can be easily determined. Additionally, monitoring of the FAD network will include a human use component to determine the visitation rates of these buoys. A post construction economic impact report will also be completed to determine actual benefit to Okaloosa County and the region.

Priorities

1. Please check the box if the proposed project or program will meet any of the following priorities (check all that apply):

   - ☒ Generate maximum estimated economic benefits, based on tools and models not generally employed by economic input-output analyses, including cost-benefit, return-on-investment, or dynamic scoring techniques to determine how the long- term economic growth potential of the disproportionately affected counties may be enhanced by the investment.
   - ☒ Leverage or further enhance key regional assets, including educational institutions, research facilities, and military bases.
   - ☒ Benefit the environment, in addition to the economy.
   - ☒ Provide outcome measures.
   - ☒ Are recommended by the board of county commissioners of the county in which the project or program will be located.

☒ Partner with convention and visitor bureaus, tourist development councils, or chambers of commerce located within the disproportionately affected counties.

2. Please explain how the proposed project meets the priorities identified above.

The proposed FAD network meets a number of the above priorities. The attached Economic Impact Report outlines the economic benefits to not only Okaloosa County but also all eight disproportionally affected counties. These figures were determined using as number of tools and models. Fisheries and oceanographic research in the northern Gulf of Mexico, specifically offshore Okaloosa County is very difficult and costly. These FAD buoys will provide a permanent, stable platform for above and sub-surface related research and monitoring initiatives spurring collaboration with key State Universities, Government organizations and research facilities in the region. Specifically, a collaboration with the Institute for Human & Machine Cognition located in Escambia County will incorporate initiatives from their Triumph Gulf Coast, Inc. funding proposal with this proposed FAD network to maximize the funding reach and benefits to the region. This network will provide environmental benefit, specifically for pelagic species of marine organisms. Habitat will be created in an area where habitat is minimal. This infrastructure will create a diverse ecosystem that will provide ample opportunities to access a pelagic fishery that was once not possible in the region. The Okaloosa County BCC have reviewed this project and deem it as beneficial to Okaloosa County as well as the region and thus recommended it for submittal to the Triumph Gulf Coast, Inc. funding opportunity. The visitor bureaus, tourist development councils, and chambers of commerce will work together to not only implement the project but also market the project to markets outside of the region. This influx of additional visitors may spur a greater economic impact then was modeled in the attached Economic Impact Report.

3. Please explain how the proposed project or program meets the discretionary priorities identified by the Board.

The Okaloosa County BCC has regularly endorsed this project and approved it for grant funding. Specifically, on Nov. 13, 2017, the BCC approved this project to be submitted to Triumph Gulf Coast, Inc. For the reasons explained above, it is a high priority by the BCC.

4. In which of the eight disproportionately affected county/counties is the proposed project or program located? (Circle all that apply)

All eight affected counties:

Escambia Santa Rosa Okaloosa Walton Bay Gulf Franklin Wakulla

The proposed FAD network is located offshore Okaloosa County but can be accessed by all eight disproportionately affected counties making this a project that benefits the entire region.

5. Was this proposed project or program on a list of proposed projects and programs submitted to Triumph Gulf Coast, Inc., by one (or more) of the eight disproportionately affected Counties as a

project and program located within its county?

Yes

If yes, list all Counties that apply: Okaloosa County

6. Does the Board of County Commissioners for each County listed in response to question 5, above, recommend this project or program to Triumph?

Yes

Approvals and Authority

1. If the Applicant is awarded grant funds based on this proposal, what approvals must be obtained before Applicant can execute an agreement with Triumph Gulf Coast, Inc.?

The agreement must be reviewed internally (Okaloosa County) and brought to the Okaloosa County BCC for final approval and execution.

2. If approval of a board, commission, council or other group is needed prior to execution of an agreement between the entity and Triumph Gulf Coast:

a. Provide the schedule of upcoming meetings for the group for a period of at least six months.

Regular Board Meetings occur every 1st and 3rd Tuesdays of each month. Currently scheduled meetings are as follows, for further meeting dates please refer to the following website: http://okaloosacountyfl.iqm2.com/Citizens/Calendar.aspx

April 3, 2018
April 17, 2018
May 1, 2018
May 15, 2018
June 5, 2018
June 19, 2018

b. State whether that group can hold special meetings, and if so, upon how many days' notice.

Yes, Okaloosa County may hold special meetings with 7 days' notice

3. Describe the timeline for the proposed project or program if an award of funding is approved, including milestones that will be achieved following an award through completion of the proposed project or program.

- At time of award: Finalize project designs and draft bid specifications to competitively solicit a construction and deployment contractor.
- 3 months post award: Construction and deployment contractor selected.
- 9 months post award: Buoys are constructed and deployed offshore Okaloosa County
- 12 months post award: Monitoring activities begin and will be conducted annually, at a minimum.
- Maintenance will begin immediately after installation and occur on an annual basis, unless required sooner.

Funding and Budget

1. Identify the amount of funding sought from Triumph Gulf Coast, Inc. and the time period over which funding is requested.

   $500,000 during year five (2019) of the proposed project as outline in table 14 of the attached Economic Impact Report.

2. What percentage of total program or project costs does the requested award from Triumph Gulf Coast, Inc. represent? (Please note that an award of funding will be for a defined monetary amount and will not be based on percentage of projected project costs.)

   Requesting 50% total project costs. Okaloosa County applied for 100% matching funds in the amount of $500,000 from RESTORE Gulf Consortium found in the draft State Expenditure Plan (SEP) for Spill Impact component, (estimated pot 3 allocation).

3. Please describe the types and number of jobs expected from the proposed project or program and the expected average wage.

   The FAD network is estimated to support 368 jobs. More detailed information can be referenced in the attached Economic Impact Report.

4. Does the potential award supplement but not supplant existing funding sources? If yes, describe how the potential award supplements existing funding sources.

   Yes

   To fully implement the proposed project, approximately $1 million is required. To date, Okaloosa County has spent just over $136,000 of which $90,121 was spent for the Feasibility Study on Design and Permitting; and $45,980 was spent for the Northwest Tourism Council on Economic Analysis. Okaloosa County requests 50% of the total project costs from Triumph Gulf Coast, Inc., the other 50% was applied for 100% matching funds in the amount of $500,000 from RESTORE Gulf Consortium found in the draft State Expenditure Plan (SEP) for Spill Impact component, (estimated pot 3 allocation). See the attached Economic Impact Report, Table 14, page 26 and the State of Florida SEP for additional financial information.

5. Please provide a Project/Program Budget. Include all applicable costs and other funding sources available to support the proposal.

Please refer to the Economic Impact Report, Table 14, page 26.

Table 14. Northern Gulf of Mexico Fish Aggregating Device Network
Preliminary Financial Statement
7-year Pilot Program containing 8-buoy Network

Inflation Factor	1.00	1.00	1.00	1.00	1.02	1.04	1.06	1.08	1.10	1.13	1.15	
2%	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	Yr 11	Total
Source of Funds	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
Tourist Development Taxes	$13,522	$76,599	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$90,121
NWF Tourism Council	$ -	$ -	$45,980	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$45,980
Triumph Gulf Coast	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Restore Impact Component	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Sports Fishing Restoration Grant	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
NRDA Grant	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Tournament Sponsorships	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Private Contributions	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Research Grants	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Other	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Sub-total	$13,522	$76,599	$45,980	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$136,101
Uses of Funds												
Feasibility Study	$13,522	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$13,522
Design and Permitting	$ -	$76,599	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$76,599
Economic Analysis	$ -	$ -	$45,980	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$45,980
Buoy, Mooring, Light, GPS	$ -	$ -	$ -	$ -	$291,312	$ -	$ -	$ -	$ -	$ -	$ -	$291,312
Shipping	$ -	$ -	$ -	$ -	$58,262	$ -	$ -	$ -	$ -	$ -	$ -	$58,262
Deployment	$ -	$ -	$ -	$ -	$208,080	$ -	$ -	$ -	$ -	$ -	$ -	$208,080
Annual Maintenance	$ -	$ -	$ -	$ -	$20,808	$21,224	$21,649	$22,082	$22,523	$22,974	$23,433	$154,693
Misc. Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Sub-total	$13,522	$76,599	$45,980	$ -	$578,462	$21,224	$21,649	$22,082	$22,523	$22,974	$23,433	$848,447
Net Cash Flows	$ -	$ -	$ -	$ -	$(578,462)	$(21,224)	$(21,649)	$(22,082)	$(22,523)	$(22,974)	$(23,433)	$(712,347)

Note: the proposed project will begin in year 4 (2018) or year 5 (2019) depending on award. Years 1-3 (2015-2017) have already been executed as outlined.

Total Amount Requested: **$ 500,000**

a. Provide a detailed budget narrative, including the timing and steps necessary to obtain the funding and any other pertinent budget-related information.

The attached Economic Impact Report details the budget and other potential funding sources associated with this project. If additional funds are awarded from numerous funding sources, those funds will be used to strengthen the buoy construction and/or extend monitoring and maintenance activities beyond seven years.

Applicant understands that the Triumph Gulf Coast, Inc. statute requires that the award contract must include provisions requiring a performance report on the contracted activities, must account for the proper use of funds provided under the contract, and must include provisions for recovery of awards in the event the award was based upon fraudulent information or the awardee is not meeting the performance requirements of the award.

☒ Yes ☐ No

Applicant understands that awardees must regularly report to Triumph Gulf Coast, Inc. the expenditure of funds and the status of the project or program on a schedule determined by Triumph Gulf Coast, Inc.

☒ Yes ☐ No

Applicant acknowledges that Applicant and any co-Applicants will make books and records and other financial data available to Triumph Gulf Coast, Inc. as necessary to measure and confirm performance metrics and deliverables.

☒ Yes ☐ No

Applicant acknowledges that Triumph Gulf Coast, Inc. reserves the right to request additional information from Applicant concerning the proposed project or program.

☒ Yes ☐ No

ADDENDUM FOR INFRASTRUCTURE PROPOSALS:

1. Program Requirements

a. Is the infrastructure owned by the public?

Yes

b. Is the infrastructure for public use or does it predominately benefit the public?

Yes

c. Will the public infrastructure improvements be for the exclusive benefit of any single company, corporation or business entity?

No

d. Provide a detailed explanation of how the public infrastructure improvements will connect to a broader economic development vision for the community and benefit additional current and future businesses.

The infrastructure for the proposed FAD network will provide the region with enhanced sport fishing and other recreational fishing opportunities. The network is estimated to support 368 jobs and generate nearly $56 million in economic (value added) impact over a 7-year period. Moreover, all things remaining equal, the region stands to gain $2.6 million in additional government revenues over the same period. While the network is estimated to cost over $700,000 during the initial 7-year "Pilot Program", it is estimated the region will experience a 2.7:1 ROI – or nearly $1.9 million in net return. See the attached Economic Impact Report for more details.

e. Provide a detailed description of, and quantitative evidence demonstrating how the proposed public infrastructure project will promote:
   - Economic recovery,
   - Economic Diversification,
   - Enhancement of the disproportionately affected counties,
   - Enhancement of a Targeted Industry.

The infrastructure for the proposed FAD network will provide the region with enhanced sport fishing and other recreational fishing opportunities. The network is estimated to support 368 jobs and generate nearly $56 million in economic (value added) impact over a 7-year period. The FAD network proposed would be the first project of its kind in the continental United States. This project will provide increased recreational sport fishing opportunities for Okaloosa County and the buoys will likely be utilized by all northern Gulf of Mexico fishermen (recreational and commercial) spanning an even greater area than the eight disproportionally affected counties. This project will also transform the region, specifically Okaloosa County from a community that targets primarily reef fish species to a community that will access the pelagic fishery that is to be created with the installation of the proposed FAD system. Diversifying the fishing activities in the region will reduce the pressure on reef fish species and reduce user conflict. Additionally it

will increase the number of jobs (i.e. charter operations) in the region that would otherwise be located in other locations where targeting pelagic fish would be more feasible. See the attached Economic Impact Report for more detailed information.

2. Additional Information

a. Is this project an expansion of existing infrastructure project?

No

b. Provide the proposed beginning commencement date and number of days required to complete construction of the infrastructure project.

The proposed project planning and permitting began in 2014. Construction is expected to begin in 2019 and be completed the same year. Maintenance and monitoring will occur for seven years following construction. A more detailed timeline and expenses associated with each year can be found in table 14, page 26 of the attached Economic Impact Report.

c. What is the location of the public infrastructure? (Provide the road number, if applicable.)

The project location is between 60 and 80 nautical miles offshore the Destin Pass in Okaloosa County. Maps and locations can be seen in the attached Economic Impact Report and Feasibility Study.

d. Who is responsible for maintenance and upkeep? (Indicate if more than one are applicable.)

Maintenance and monitoring will be a joint effort between Okaloosa County and the eight disproportionally affected counties as specified in the attached economic impact report.

e. What permits are necessary for the infrastructure project?

A single Army Corps of Engineers (ACOE) permit is required to deploy these FAD buoys offshore Okaloosa County. The permit and review process began two years ago and the final review has been forwarded to ACOE for drafting of the final permit. Permit issuance is imminent and is expected to be issued in the next 6 months.

f. Will an amendment to the local comprehensive plan or a development order be required on the site of the proposed project or on adjacent property to accommodate the infrastructure and potential current or future job creation opportunities? If yes, please detail the timeline

No

g. Does this project have a local match amount? If yes, please describe the entity providing the match and the amount.

Yes

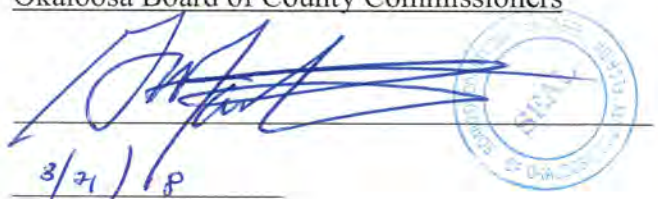
Approximately $136,000 of matching funds have already been spent on design, permitting, Feasibility Study and Economic Impact Report of the proposed Fish Aggregating Devices network project. Tourism Development Taxes and Northwest Florida Tourism Council funds have funded the initial efforts. Okaloosa County applied for 100% matching funds in the amount of $500,000 from RESTORE Gulf Consortium found in the draft State Expenditure Plan (SEP) for Spill Impact component, (estimated pot 3 allocation).

I, the undersigned, do hereby certify that I have express authority to sign this proposal on my behalf or on behalf of the above-described entity, organization, or governmental entity:

Name of Applicant: Okaloosa County Board of County Commissioners

Name and Title of Authorized Representative: Commissioner Graham W. Fountain
Chairman
Okaloosa Board of County Commissioners

Representative Signature:



Signature Date: 3/21/18

Board of County Commissioners

State of Florida

March 20, 2018

Triumph Gulf Coast, Inc.

RE: Delegation of Authority

To Whom It May Concern:

The current Okaloosa County authorizing official is Commissioner Graham W. Fountain. Chairman Fountain was nominated and approved to serve as the 2018 Chairman of the Okaloosa County Board of County Commissioners on December 5, 2017; replacing the 2017 Chairman (Carolyn N. Ketchel).

Please accept this as our formal delegation of authority letter.

Sincerely,

Jane Evans

Jane Evans
Grants and RESTORE Manager

Enclosure

- 302 N. Wilson St • Crestview, FL 32536 • (850) 689-5030 • Fax: 689-5059
- 1250 N. Eglin Pkwy, Suite 100 • Shalimar, FL 32579 • (850) 651-7105 • Fax: 651-7142

location, background, and reason for the change request on the subject property.

No one from the public came forward to speak on this request and the Public Comments portion was closed.

Mr. Fountain made motion, seconded by Mr. Goodwin, to approve the Future Land Use Map designation change. 4 yeas.

ORDINANCE 17-25

Mr. Fountain made motion, seconded by Mr. Goodwin to approve the rezoning request of the same subject property. 4 yeas.

ORDINANCE 17-26

* NEW BUSINESS - SELECTION OF BOARD CHAIRMAN AND VICE CHAIRMAN FOR CALENDAR YEAR 2018

Mr. Goodwin made motion, seconded by Mr. Boyles, nominating Mr. Fountain, who is current Vice Chairman, as Chairman of the Board for the 2018 calendar year. Mr. Fountain accepted the nomination. 5 yeas.

Mr. Boyles made motion, seconded by Mr. Fountain, to nominate Mr. Windes as Vice Chairman to the Board for the 2018 calendar year. Mr. Windes accepted the nomination. 4 yeas, 1 nay (Goodwin).

PUBLIC COMMENTS

Mr. Tripp Tolbert, Destin, stated as President of the Okaloosa Island Leasehold Association, he would like to bring attention to the problem with non-resident boat drivers not adhering to the no-wake zones in the County. He also spoke on the issue of floating structures during the non-season and where they are parking these structures.

Mr. Tolbert, then advised aside from his business affiliation he would like to address the Board as a resident. Mr. Tolbert commented on the beach sand quality issues as well as beach re-nourishing.

Mr. Steve Hancock, Ft. Walton Beach, spoke about the Christmas decorations that have recently been put up in his area and encouraged the Board Members to come out and see them. He added

ANCHORING BUOY SYSTEM FOR FISHING
IN THE DEEP GULF OFFSHORE OKALOOSA COUNTY

Feasibility Report

1.0 INTRODUCTION

Okaloosa County has requested that Taylor Engineering investigate the feasibility of placing anchoring (mooring) buoys in the Gulf of Mexico (GOM) approximately 50 – 100+ nautical miles south of the Florida Panhandle (**Figure 1**). The area of interest includes the West Florida Shelf in the areas of the De Soto Canyon and the intersection of the Canyon and the West Florida Escarpment. Depths in the area of interest range between 500 and 5,000 feet (ft) (150 – 1,500 meters [m]). The Loop Current, while variable, often extends to the south edge of the area of interest, creating favorable conditions for many highly migratory species (Roffs, 2014). The area also includes the northern portions of the Essential Fish Habitat areas for a wide range of highly migratory fishes, including most of the billfish and many of the tuna species that reside in the gulf (**Figure 2** and **Figure 3**).

Okaloosa County proposes to deploy the mooring buoys to attract pelagic game fish and expand recreational and sport fishing opportunities for County visitors. Whether the County contemplates a single buoy or a network of buoys over many miles, the general principles of the buoy design and the expected biological responses remain the same.

Human fishing behavior has included construction and use of devices to attract fish in the open ocean near land for millennia (Dempster and Taquet, 2004). At the outset, it is important to recognize that the open ocean water column in general consists of a featureless desert of water with little or no structure. Any sort of floating material (e.g., logs, rafts of flotsam, drifting boats) will typically attract fish, and the longer that material remains, the more colonists (and prey items) will inhabit the floating material and the water column immediately adjacent to the structure. Through time, a diverse fish assemblage will visit the structure. This sequence of events lies at the heart of all attempts to attract fishes with structures.

This report will cover the following subjects: effectiveness of buoys in attracting fish; offshore buoy design, maintenance, and longevity; billfish habitat in the Gulf of Mexico; and regulatory steps necessary to permit buoy placement. We selected billfish as a focus because they comprise a primary interest of recreational and sport fishermen in the deep waters of the GOM. Tuna species, also of interest, have characteristics similar to billfish; thus, the discussion on billfish also generally applies to many of the tuna and other pelagic species.

2.0 OCEAN BUOYS AS FISH AGGREGATORS

As indicated in the introduction, structures, natural or artificial, attract many species of fish in freshwater, estuarine, and marine environments. This occurs in the nearshore and deep ocean marine environments. While the cause of this behavior remains unclear, the consistency of the effect (thigmotropism, the attraction to a solid object) yields sufficient confidence that artisanal fishermen, the commercial fishing industry, and recreational fishermen use such floating devices — either anchored or drifting, at the surface, midwater depths, or both, nearshore and offshore areas, and at a wide variety of water depths. Fish assemblages associated with floating objects are a common component of marine fisheries literature (e.g., Deudero et al., 1999) and there is considerable data that seasonal variation occurs in these assemblages. There is some evidence that different species are more and less attracted to FADS (Fish Aggregating Devices) [e.g., Deudero et al., 1999 (Mediterranean Sea); Nelson, 2003 (Pacific Ocean off Panama); and Dagorn et al., 2013(Indian Ocean, Wilkins and Goodwin, 19xx)]. FADs have also been recommended as a tool to assess fish diversity in the open ocean (e.g., Gaertner et al., 2008). Concerns about the potential biological impacts of FADs have been discussed for some time (Polovina, 1991; Sinopoli et al., 2007). In summary, floating buoys, whether anchored or drifting, aggregate fish, making them easier to catch. There is little evidence that they increase biomass / productivity, and there is concern regarding the relationship between these devices and the commercial exploitation of the ocean fish populations. Concerns expressed in the technical and more general interest literature and websites focus on the effects of aggregating devices and commercial-scale capture where the increased capture rates and extensive bycatch may severely impact target species, target species juvenile fish stocks, and other, non-target fish stocks that prior to the use of such devices were captured at a much lower rate or not captured. Notably, the potential impact on juvenile or non-target species is primarily a function of the catch methodology (i.e., net fishing poses increased impact potential to juveniles and non-target species whereas standard recreational fishing practices pose little threat to juvenile and by-catch or non-target species). The allowable catch methodology (fishing gear) and fishing areas are primarily regulated by NOAA's Office of Sustainable Fisheries and the National Marine Fisheries Service (NMFS).

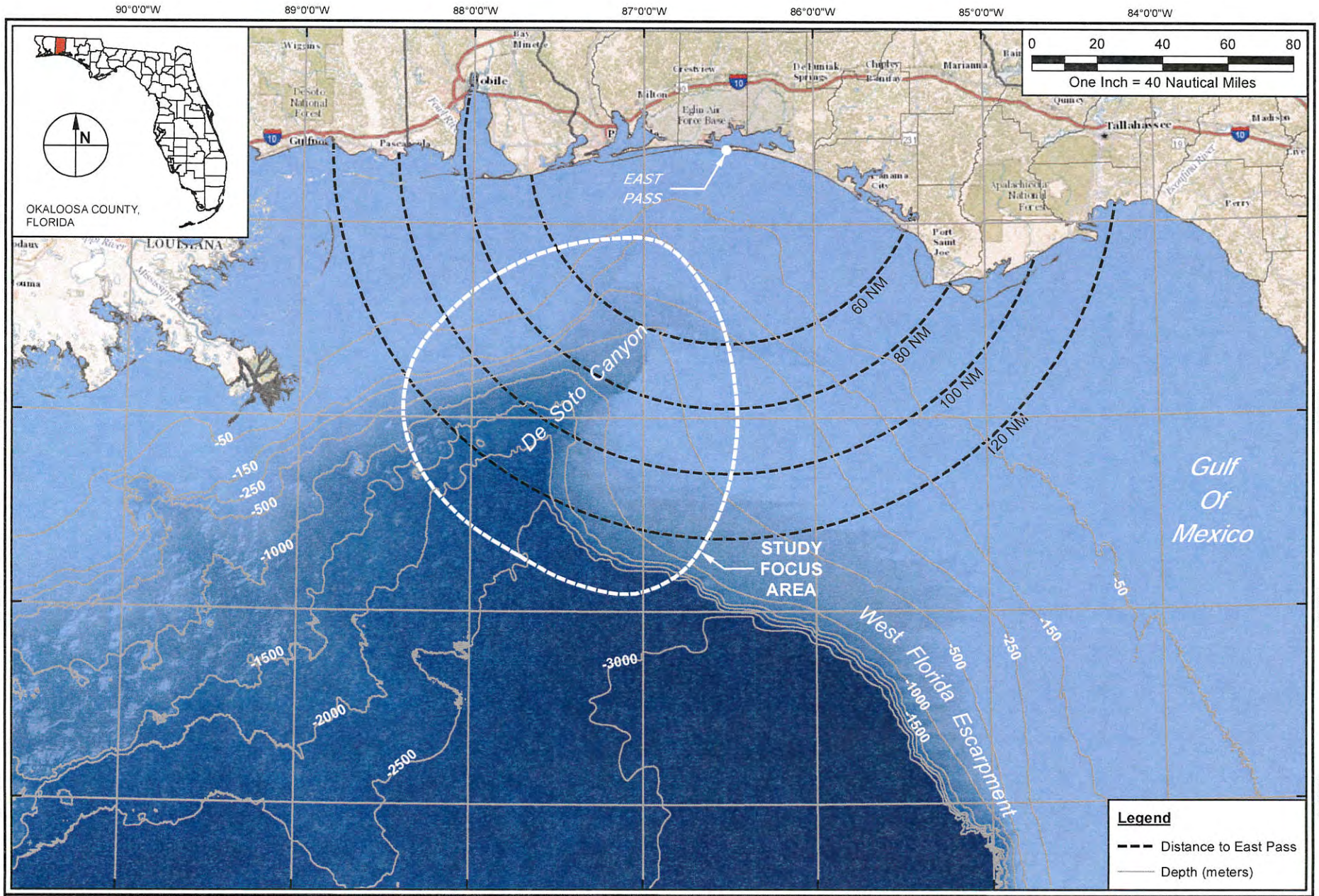


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FIGURE 1
STUDY FOCUS AREA
OKALOOSA ABF STUDY
OKALOOSA COUNTY, FL

Notes:
1. Bathymetry Source: National Geophysical Data Center, NESDIS, NOAA, U.S. Department of Commerce
2. Basemap Source: USGS
3. Vertical Datum: MLLW Meters
4. Horizontal Datum: NAD 1983

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\\NAS2K12\nass2\PROJECTS\C2014-042 Okaloosa ABF Study\GIS\MXDs\Figure 1 Overview Study Focus Area_NoHorseshoe.mxd

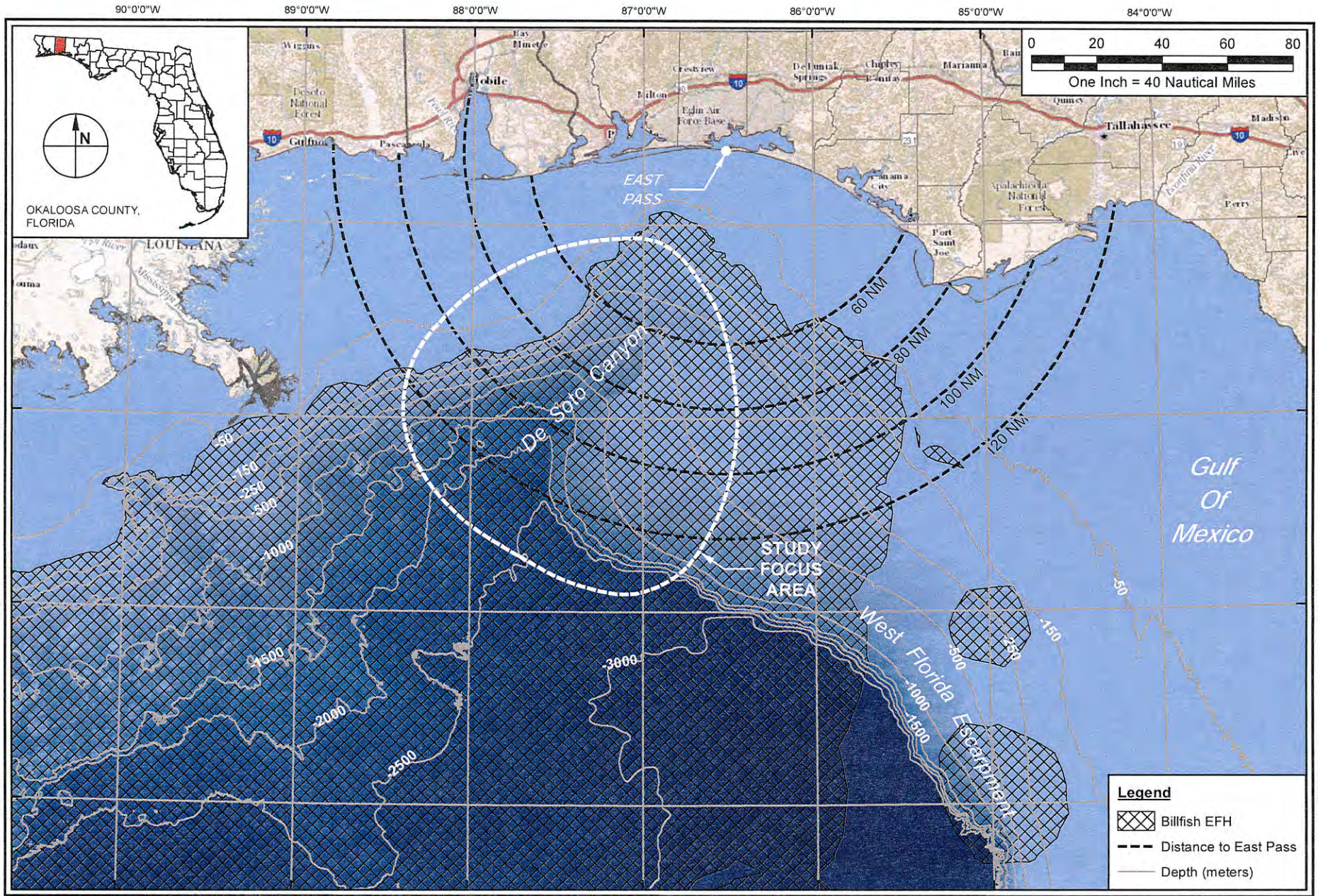

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FIGURE 2
ADULT BILLFISH, ESSENTIAL FISH HABITAT (EFH)
OKALOOSA ABF STUDY
OKALOOSA COUNTY, FL

Notes:
1. Bathymetry Source: National Geophysical Data Center, NESDIS, NOAA, U.S. Department of Commerce
2. Basemap Source: USGS
3. Vertical Datum: MLLW Meters
4. Horizontal Datum: NAD 1983

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\\NAS2K12\nass2\PROJECTS\C2014-042 Okaloosa ABF Study\GIS\MXDs\Figure 2 Billfish.mxd

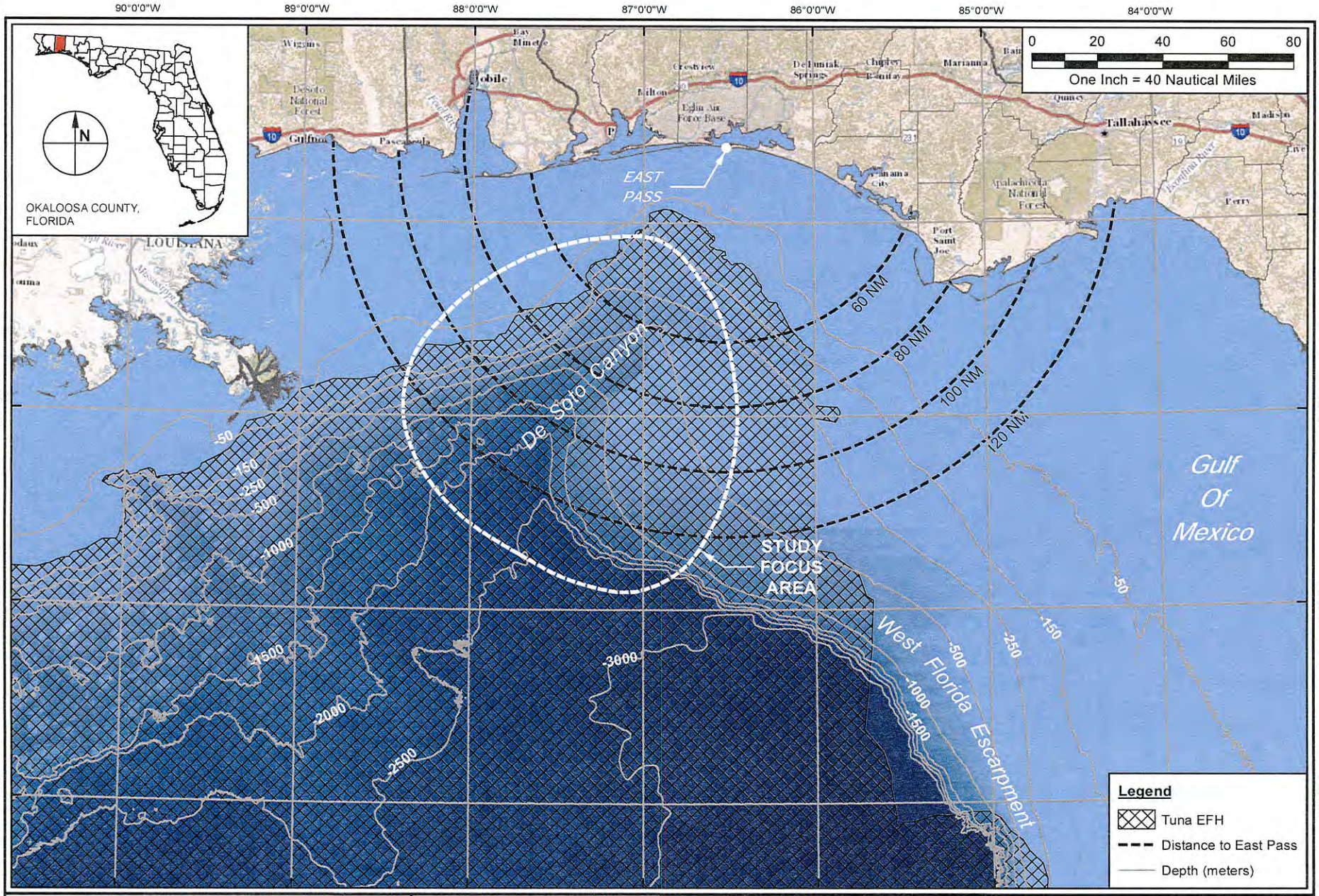

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FIGURE 3
ADULT TUNA, ESSENTIAL FISH HABITAT (EFH)
OKALOOSA ABF STUDY
OKALOOSA COUNTY, FL

Notes:
1. Bathymetry Source: National Geophysical Data Center, NESDIS, NOAA, U.S. Department of Commerce
2. Basemap Source: USGS
3. Vertical Datum: MLLW Meters
4. Horizontal Datum: NAD 1983

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\\NAS2K12\nass2\PROJECTS\C2014-042 Okaloosa ABF Study\GIS\MXDs\Figure 3 Tuna.mxd

3.0 MOORED BUOY LOCATIONS

Mooring and fishing buoys are in use around the world, in all major oceans and seas, in estuarine, nearshore, and deep ocean waters. Anchored buoys for artisanal / subsistence fishing occur around many Caribbean islands, Guam, West Indian Ocean islands (e.g., around the Seychelles, Comores Island, and Mauritius), Australia, New Guinea, the South Sea islands, etc.; however, very few documented fishing buoys occur in American waters. A very old technology, the use of buoys and other floating objects to attract fish has garnered a great deal of interest as expanding populations and industries continue to exploit ocean fisheries at an ever increasing rate, aided in part by these devices. The islands of Hawaii have an extensive anchored FAD system for recreational uses, in place for over 30 years (Holland et al., 2000). The Hawaii system is the only currently active FAD system in the United States. The State of Hawaii, University of Hawaii (which manages the FAD system), and NOAA are discussing a permit for the system, which was developed prior to a permitting requirement (personal communication, July 2014, Warren Cortez, University of Hawaii). The government of Guam, an American protectorate, began development of an anchored FAD system in 1979 (Torres, 2000) and has a system of 14 FADs in its program (Government of Guam, 2011). The FADs are part of a Marine Conservation Plan approved by the US National Marine Fisheries Service for the period 2011 – June 2014 (Government of Guam, 2011). The Caribbean Regional Fisheries Mechanism (CFRM), an organization of 20 Caribbean Island nations, is exploring the use of anchored FADs to increase sustainable fisheries and provide an economic boost to the member countries (CRFM, 2013). Given the lack of documented buoy systems within the United States and the limited information available on the above programs, the Hawaii program serves as a model for developing a similar program in Florida offshore of Okaloosa County.

4.0 BUOY DESIGNS AND ORDER OF MAGNITUDE COSTS

The state of Hawaii has maintained a FAD system since 1977. Following the success of a few experimental anchored rafts established by the Honolulu Laboratory (Southwest Fisheries Center) of the National Marine Fisheries Service, the state expanded the system in the 1980s and placed the program under the operational management of the Hawaii Institute of Marine Biology (HIMB), School of Ocean and Earth Science and Technology (SOEST) of the University of Hawaii in 1996. HIMB currently maintains 55 buoys statewide.

The Hawaii FADs lie in 700 – 10,000 ft (200 – 3,000 m) of water. Surface buoys (buoys floating on the surface) (**Figure 4**) maintain an average life span of 3 – 4 years (Holland et al., 2000; personal communication, July 2014, Cortez) and subsurface buoys (**Figure 4**) last 5 – 6 years. In comparison, deep ocean NOAA data buoys have a reliability of 50% (even odds of failure of the mooring system) in 1 – 3 years after deployment and a reliability of about 15% in 5 years (Maxwell et al., 2010).

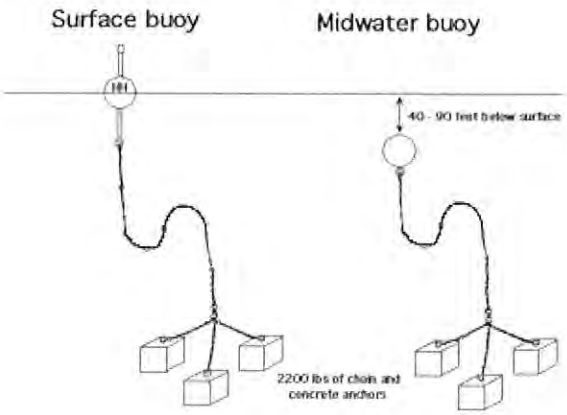

Figure 4. Surface and Subsurface Buoys (figure provided by HIMB, SOEST, University of Hawaii)

For the Hawaii system, depth does not affect buoy longevity; however, exposure to constant Trade Winds tends to shorten buoy longevity to the low end of the range. Typically, the Hawaii buoys experience conditions ranging from calm waters on the leeward side of the islands to 15 – 30 mph winds producing 5 – 6-ft short frequency waves with strong currents on the windward side. These "tradewind seas" with more rapid movements can significantly reduce buoy longevity. Generally, leeward buoys survive an average of 43 months while windward buoys survive an average of 25 months — a 40% reduction in expected longevity. One would anticipate that the periodic storm exposure with winds exceeding 40 mph in the GOM would further reduce buoy longevity. As such, the proposed program should implement design changes to account for the rougher conditions.

The Hawaii program found that the single spherical spar buoy design (**Figure 5**) provided the best performance while minimizing losses. **Figure 5** shows a typical Hawaii FAD surface buoy system. The system consists of a 200-lb (400 kg) 4.8-ft diameter steel spherical spar buoy with 3,000 lbs (1,400 kg) of positive displacement. The 3.5-ft mast atop the float holds a light system and 7-ft pipe welded below the float provides a counterweight to maintain the buoy upright. About 100 ft of 13 mm chain attaches the buoy to the rope mooring system. Sections of negatively buoyant and positively buoyant nylon rope provide an inverse catenary or "slack" ("S" shape) mooring system. The nylon rope and mooring system provide the slack needed to absorb cyclic loading on the mooring as the surface buoy heaves in the waves and ensures that the lower part of the mooring will not drag on the ocean bottom as might happen with a conventional catenary system. Three 1,700-lb concrete block anchors attached to 80 ft of 13 mm chain deployed in a tripod configuration provides the anchor system for the buoy.

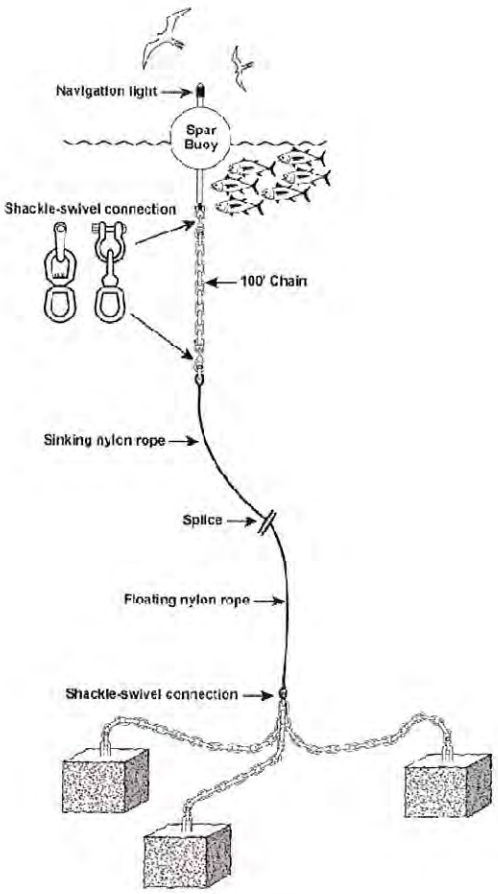

Figure 5. Single Spherical Spar Buoy Design (figure provided by HIMB, SOEST, University of Hawaii)

This buoy and anchor system typically costs an average of $8,000 – $9,000 to build and install offshore Hawaii with the nylon rope being the highest single component cost at approximately $2 per foot ($2,000 – $20,000 for 700 – 10,000 ft). Ship time for installation ranges from $7,000 – $8,000 per day. Simultaneous installation of multiple buoys allows significant cost savings resulting in the average cost of $8,000 – $9,000 to build and install. Notably, Hawaii buoy installation sites generally lay 5 – 20 miles from land, which reduces ship travel time for the installation. In comparison, a relatively small (3m) discus buoy (similar to the discus buoys used by NOAA to mount oceanographic instrumentation in the area of interest) may cost approximately $20,000 for just the buoy. The mooring system may cost between $10,000 – $50,000 depending on the water depth (200m – 800m) and installation in the proposed project area may cost approximately $20,000 – $40,000 depending on the total number of buoys proposed and the distance offshore. The increased mooring and installation costs primarily result from the larger buoy(s) imparting increased forces on the mooring system and requiring larger or more specialized vessels for deployment. From the information above, the water depth appears to be the greatest controlling factor for both the discus and spar buoy structures.

Based on the research cited, the typical failure mechanisms of the Hawaii buoy system result from near-surface shackle connections (i.e., failure due to the rapid movements and friction damage near the surface) or rope breakage. Rope breakage is believed to be caused by cyclical loading resulting from

increased wave and currents, barnacle growth, and/or shark or other sharp-tooth fish biting the ropes. From conversations with Hawaii researchers, vessels mooring to the buoy system also decrease the structure life by increasing the loading on the mooring line and connection hardware. Notably, a correlation between depth and longevity was not apparent from the Hawaii FAD system. Similarly, typical failure mechanisms of NOAA buoys in the GOM generally result from severing of the synthetic line either through deliberate or accidental vandalism. In fact, from discussions with the National Data Buoy Center (NDBC) staff, they have begun installing camera systems on the frequently damaged buoys to deter vessels from mooring to the buoy. Connection hardware failure is generally less of a concern because the buoys and/or mooring systems are typically replaced every 3 – 5 years.

Equipping the surface buoy with a GPS tracking system will allow easy relocation of the equipment should the connection system fail. However, the anchoring system can only be reused if it is retrieved from the bottom using specialized surface vessels equipped with cranes and underwater autonomous vehicles. Given the proposed water depth of 1,000 ft or greater, the cost of retrieving the anchoring system will likely be cost prohibitive.

A small-scale (1 – 3 buoys) installation in the GOM (~40 – 60 miles to the site) with a more robust buoy system designed to survive moderate GOM storms may cost $20,000 – $30,000 per buoy (to build and install). This estimate is primarily based on a preliminary scaled-up version of the Hawaii system (larger anchors, chain, and rope) with a large diameter, round (spar) buoy. The availability of large-scale commercial vessels (capable of performing multiple deployments in a single trip) may greatly affect the cost estimate. Designing the structure to provide a platform for scientific instrumentation or vessel mooring (larger discus buoy and mooring system) presents additional design challenges. Given the distance offshore, the vessels mooring to the structure will likely be 50+ ft in length and the County will have little to no control over the number or size of vessels mooring to the structure. Such vessels may also attempt to anchor to the structure during increased wave/current events exponentially increasing the loading on the structure and connection hardware. Vessels moored to the structure also pose increased damage potential to any equipment that may be mounted on the surface buoy (e.g., solar panels, navigation lights, scientific/environmental monitoring equipment, etc.). Designing the structure to withstand the potential loading cases associated with vessel mooring will greatly increase the structure cost and increase the potential for structure failure (reduced structure life). The increased damage potential with a mooring structure will also likely require additional monitoring and buoy inspections, increasing the maintenance costs of the structure(s). Comparing the relatively simplistic, low-cost Hawaii buoy system with typical (higher-cost) NOAA buoys, the County should first install a small-scale buoy network similar to the Hawaii system. The County can make design modifications to future deployments based on 1 – 2 years of monitoring data from the original system. Further, because deep-water buoy systems are prone to failure, the County should consider the purchase of a buoy system (buoy, mooring, and anchor) designed as a unit. This may provide the greatest amount of confidence in optimal buoy lifespan.

5.0 BUOY LOCATIONS

Given the scope of this preliminary study, we do not propose specific locations for a proposed buoy system. However, we provide the following items for consideration when planning the proposed buoy network.

- Target Fish Species — Figures 2 and 3 provide essential fish habitat maps for two primary target species (billfish and tuna). Additionally, available literature indicates these species prefer variations in water temperature and depth that typically occur along and within the De Soto Canyon.
- Water Depth — based on information presented in the previous section, the depth of water will likely greatly affect the initial material costs.
- Distance Offshore — the County should consider the distance offshore of the buoy system, specifically for proposed use (e.g., recreational fishing), installation and maintenance costs, local preference, etc.
- Bureau of Ocean Energy Management (BOEM) lease areas — as discussed below, placing the buoys in offshore federal waters will likely require a permit and/or consent of use agreement from BOEM. If the proposed buoy area is already leased, obtaining additional use agreements from the BOEM leasee may present additional difficulties for installation and maintenance of the system. However, relatively few active leases exist in the area of interest for placing buoys.
- Buoy spacing — technical literature suggests 4 – 8-mile spacing between buoys in the Hawaiian system has been successful for effective fish attraction. Some research (reported in Dempster and Kingsford, 2003) indicates that fish orient to FADs spaced up to 18 km (approx. 12 miles) apart. Tuna may orient to anchored buoys from a distance of 10 km (Leroy et al., 2013).
- Additional uses — the County should also consider utilizing the buoys (or a single buoy) as a platform for oceanographic or ecological monitoring equipment. Utilizing the buoy(s) as a research platform may reduce the initial and maintenance costs through research partnerships; however, including this equipment may also increase the overall cost of the buoy and mooring structures (i.e., larger buoy and anchoring system).

Much of the deeper GOM bottom has been leased to members of the energy industry for oil, gas, and other mineral exploration and extraction. BOEM manages these leases and regulates mineral resources in Federal waters. Many active leases exist in the northern Gulf of Mexico, but relatively few lie within the project area of interest and should be easily avoidable (**Figure 6**). Regardless, the County will still likely be required to coordinate with BOEM regarding the installation of the buoy system.

Considering only the target fish species and water depth, the County should consider placing buoys near the northern tip of the De Soto Canyon and atop the West Florida Shelf along the eastern edge of the De Soto Canyon.

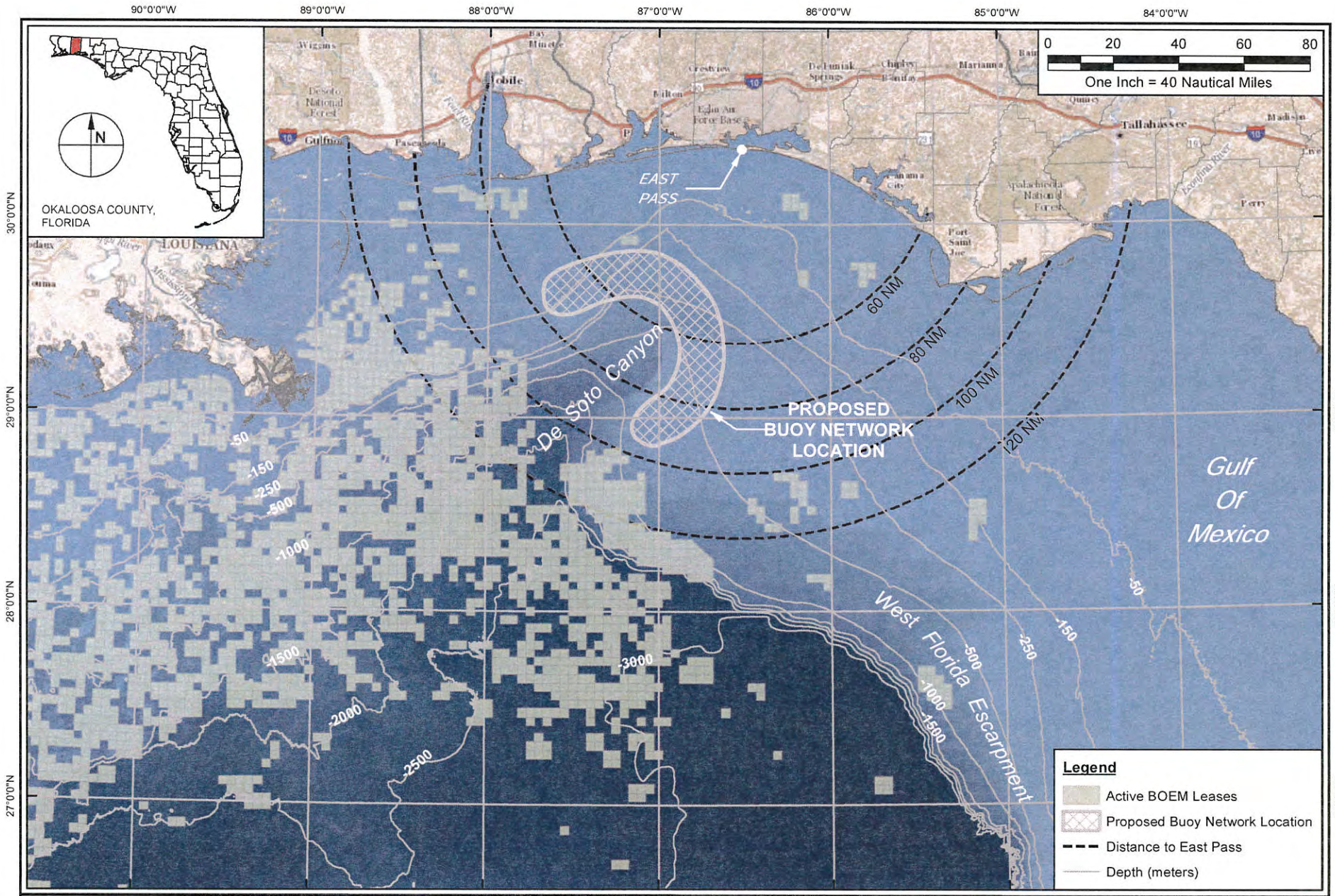

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FIGURE 6
BUREAU OF OCEAN ENERGY MANAGEMENT (BOEM) LEASES
OKALOOSA ABF STUDY
OKALOOSA COUNTY, FL

Notes:
1. Bathymetry Source: National Geophysical Data Center, NESDIS, NOAA, U.S. Department of Commerce
2. Basemap Source: USGS
3. Vertical Datum: MLLW Meters
4. Horizontal Datum: NAD 1983

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6.0 BUOY MANAGEMENT CONSIDERATIONS

A buoy management plan should consider periodic (e.g., twice yearly and after major storm events) examination to verify that the buoys remain in place and that any equipment on the buoys (lights or signaling devices) function properly. Notably, regulatory authorizations for buoy installation (further discussed below) may require more frequent observations and will likely require a regular monetary commitment from the project sponsor for monitoring. The County should also consider hosting a website for recreational fishermen to report observed damage or a missing buoy. The website could also serve as a platform for fishermen utilizing the buoy network to report their catches, observations, uses, etc. Replacement of failed buoys should occur on a scheduled basis. Buoys that have survived a 3 – 5-year period should be assumed at the end of their lifespan and replaced before they fail. Okaloosa County should consider placement of a signal device (Global Positioning System Signal generator) on each buoy so that in case of buoy mooring failure, the County can track and recover the float and any trailing line. A specific signal for each buoy and a publicized reward for return of the buoy when buoy failure occurs may provide a means to allay concerns that in the long-term the buoys would contribute additional floating marine debris or navigational hazards when they fail. The County should also consider public-private partnerships to help support the buoy system construction and maintenance, because a relatively select group of stakeholders will benefit from the project.

While the County can implement the recommendations above to manage the proposed buoy system, regulating the use of the buoys will likely prove very difficult given the distance offshore and potential use by both commercial and recreational fishermen from the Gulf of Mexico states and elsewhere. From discussions with Warren Cortez (Hawaii FAD system supervisor), Hawaii allows all legal fishing at the FAD network and the buoys are heavily used by both recreational and commercial fishermen. In Hawaii, large-scale commercial fishing (long-lining, seining, etc) is not allowed around the buoy system since the buoys are relatively close to shore (3 – 15 nautical miles). The far offshore location of the Okaloosa County-proposed buoys and the likely use of the buoy system by both commercial and recreational fishermen may be cause for concern with federal regulators. Okaloosa County has no formal responsibility or authority to regulate fishing activities in the offshore US waters.

7.0 BUOY PERMITTING PROCESS

Placement of a buoy or buoy network in the Gulf of Mexico would require a federal permit from the U.S. Army Corps of Engineers (USACE). The USACE would likely depend heavily on the opinions of and recommendations from its federal sister agencies, particularly the National Oceanographic and Atmospheric Administration Fisheries division (NOAA Fisheries). The USACE would likely request the Coast Guard review the buoy and buoy mooring system engineering design and make recommendations to minimize potential impacts to navigation. BOEM will likely review the permit application regarding the specific location proposed and active mineral leases and pipelines (**Figure 6**). Given the unprecedented nature of the proposed project, it is uncertain whether BOEM will require a permit or a letter of consent for the installation of a single buoy or buoy network.

7.1 Permit Application Components

A USACE permit application for a moored buoy or buoy network installation and operation in the area of interest would most likely take the form of an application for individual 404/401 ("dredge and fill") permit. A USACE Nationwide Permit (NWP) Type 27 "Aquatic Habitat Restoration, Establishment, and Enhancement Activities" might apply to the project, but NWP 27, which generally includes placement of devices to enhance fishing, specifically excludes the use of this permit type for placement of FADs in Florida. Whether or not a buoy proposed by an entity in the state of Florida for placement in federal waters would also fall within the prohibition is a matter to discuss at a pre-application meeting (see below). In any case, the lack of previous construction of this type of structure in the region and the consequent lack of federal agency knowledge of such activities will likely cause the USACE to require an individual permit.

A permit application would require some or all of the following.

- A detailed description of the project including the project location or locations, the project purpose, engineering designs and construction methods, and maintenance plans.
- Demonstration that the project is in the public interest.
- Demonstration that the applicant has the means to fully support the project for the project lifespan (including commitments from the applicant for required maintenance and monitoring, and possibly removal).
- An Environmental Assessment (EA) to characterize the affected environment and potential effects of the proposed project on the environment and ecosystem.
- A cumulative impact analysis to assess the "reasonable and foreseeable" actions that may occur as a result of the proposed action.
- A Biological Assessment (BA), as the Bluefin Tuna has been nominated for Threatened and Endangered species status.

The first three bullet items would be required for any permit type. The last three bullet items are associated with National Environmental Policy Act (NEPA) consultations that the USACE will undertake with NOAA Fisheries and possibly other federal agencies. The NEPA-related documents are developed as part of the consultation between federal agencies. In reality, the federal agencies are hard pressed to develop these documents and may require long timeframes to complete the analyses for Environmental Assessments, Biological Assessments, and Cumulative Impact Assessments. Applicant-submitted documents are often accepted as at least a basis for development of the final documents required for a formal consultation. Producing these documents for the federal agencies may greatly increase the speed with which the consultation process occurs; however, applicant permitting costs will increase because the County will bear the cost of document preparation. Once the agencies determine that a file is complete, the NEPA consultation process begins.

Because of the expected level of interest in the permit application and the complicated fisheries concerns associated with the project, the USACE may require a sophisticated, expert analysis of the natural resource issues. A nationally known, experienced marine fisheries expert would likely provide the most accurate and cost-effective environmental assessment and cumulative effects assessments. The expert opinions may also find more acceptance with agency reviewers. An expert should also be

consulted to identify the number of buoys and buoy placement locations that would best achieve the County's desired results and reduce unintended impacts.

7.2 Initial Permit Application Planning and Pre-application Meeting

Prior to permit application, we recommend a pre-application meeting with USACE to solicit feedback, identify agency concerns, and obtain agency recommendations for permit application package components. An initial submittal to the agency in advance of the pre-application meeting should provide the location, purpose, conceptual designs, and any already identified management plans and public support for the project. The USACE expects that the plan presented at the pre-application meeting is the one that they will see in the submitted application package. Because the proposed project will be new to the federal agencies offices in Florida, and probably the southeast U.S., the meeting request may also suggest participation by USACE, NOAA Fisheries staff, and other USACE commenting agencies who may review the permit application.

7.3 Application Package Development

The permit application will identify the overall design, the buoy system manufacturer or fabricator, the maintenance plan, a commitment to the necessary budget to execute the plan, and the expected project lifespan. Other application components such as monitoring plans, environmental assessments, etc. will be identified at the pre-application meeting.

Demonstration that the project is in the public interest is an important application component. Letters of support from as broad a range of individuals and organizations will help resolve this component of the permit application review. Letters of support may derive from Okaloosa and neighboring County governments or organizations (Boards of County Commissioners, Tourist Development Departments, Economic Development Center, etc.); County non-profit groups (Gulf Coast Marine Life Center, Destin Charter Boat Association, etc.); local and state Sportfish Associations (Florida Sport Fishing Association, Florida Sports Foundation, Emerald Coast Blue Marlin Classic, etc); and/or academic partners (University of Miami, etc.).

A permit application without detailed natural resource analyses could be developed and submitted in 2 – 3 months after the pre-application meeting. Development of a permit application including NEPA documents will likely require 4 – 6 months after a pre-application meeting, depending on the level of detail required by USACE and other commenting agencies.

7.4 Permit Application Review Process

Initial USACE review would determine what additional information it requires to consider the package complete. Assuming the USACE initial review concludes the application package sufficient to submit to other federal agencies for review, the other review agencies would make a similar initial review and provide the USACE reviewer with any additional information requirements. Notably, no timeframe exists for any of these federal review processes. As part of its NEPA responsibilities, the USACE would consult with NOAA Fisheries. Groups within NOAA Fisheries engaged in review might include the Habitat Conservation Division, and possibly the Protected Species Division and Sustainable Fisheries

Division. Fisheries staffs would consider potential effects of the buoys on the pelagic and highly migratory fish populations that the buoys are expected to attract, and to be fished for by the recreational fishermen using the buoy network. Fisheries staff will also consider the potential effects of the buoys in relation to commercial fishing. The Protected Species Division will review the project for potential effects on marine sea turtles and/or right whales and possibly the Bluefin tuna due to the current petition to place the species on the endangered species list. In addition, the U.S. Coast Guard would review the design of the buoy and buoy anchoring system for navigation concerns.

Federal permit application review timeframes depend on the level of detail the USACE and its sister federal agencies require before it is willing to undertake consultation, the type of consultation required (informal or formal), and the level of uncertainty identified for the proposed action. Given the potential issues surrounding the proposed project and the regulatory agencies' general unfamiliarity with such a project, a 12 – 18-month permit review period would not be unusual.

Assuming a formal (as opposed to informal) NEPA consultation is required, the consultation process has a 135-day schedule. After that schedule is complete and assuming that the agencies reach a positive conclusion regarding the project, the USACE may require another three months to complete and authorize the permit. An informal consultation may require less time; however, the agencies are not held to a fixed time schedule. The actual processing/review time depends on the reviewer's availability to complete the necessary work.

7.5 Interviews with NOAA Fisheries

The permit application for the proposed project may receive considerable scrutiny as the use of FADs are the subject of extensive discussion in the United States and around the world. The dramatic decline of pelagic and highly migratory fish stocks in the past 30 years has caused the U.S. and other national governments, and many of the major international conservation organizations, to focus on the level of fishing and the means of fishing for these species, including the use of floating or drifting buoys. These buoys, released by the dozens or hundreds at a time, allow commercial fishermen (typically net fishermen) to more effectively catch the species they desire, but also more effectively trap "bycatch" — fishes that are not the target species — as a result of the broad thigmotropic effect of buoys in the open ocean. The bycatch (typically juveniles of many species) may be partially responsible for the observed population declines. Thus placement of such devices in an area known for highly desirable commercially-exploited fish species may result in additional fishing activity not only by recreational fishermen but also by commercial fishermen from small businesses to very large international fishing corporations. Because of the heightened attention that such devices are receiving, Taylor Engineering interviewed NOAA Fisheries staff to assess their knowledge about buoys anchored in the deep ocean and to elicit their concerns about such activity.

Interviews with members of NOAA Fisheries Regional Headquarters Habitat Conservation Division and Sustainable Fisheries Division in St. Petersburg, Florida and Gloucester, Massachusetts suggested to the interviewer that these offices of NOAA Fisheries has relatively little experience in reviewing and considering the type of moored buoy project envisioned by Okaloosa County. The concerns identified in the relatively short (1/2 hr – 1 hour) telephone interviews included the following.

- What is the expected lifespan of the proposed buoy?
- How often will buoys be replaced?
- If a buoy is lost will the rest of the gear (anchor line and anchor) be retrieved?
- Will each new buoy be placed in the same location as the lost or replaced buoy?
- Will buoys that become separated from their moorings be tracked and picked up by the project owner? Does the owner have the capacity for this action?
- Will the buoys be installed permanently or placed and removed seasonally?
- Will a research / monitoring program be included as part of the project?

The last question was often repeated, because any information on deep ocean fish communities would be very valuable both in a regulatory context and as basic scientific information. County support (not necessarily monetary) and encouragement of a fish monitoring component may become another means of providing the regulatory agencies some level of comfort that they are meeting their charge to manage the national resources responsibly.

In addition to the questions above, Taylor Engineering also discussed allowable commercial fishing activities in the proposed project area (De Soto Canyon). Interestingly, the proposed project area is closed to commercial long-lining for highly migratory species and the NMFS staff interviewed were unaware of any migratory species purse seiners operating within the Gulf of Mexico. However, as many commercial fishermen currently operate within this area of the Gulf with non-restricted gear and would likely utilize the proposed buoy(s), fisheries staff did indicate concern over the potential increase in both commercial and recreational fishing activities in the area and the potential impact to species of concern.

This is certainly not an exhaustive list of questions that the agency might consider; the staffs interviewed indicated that they did not have much experience considering this sort of project and would likely identify other questions as they consulted with the USACE and reviewed submitted materials.

7.6 Other Interviews

In addition to the interviews with NOAA Fisheries staff, Taylor Engineering also interviewed Florida Fish and Wildlife Conservation Commission (FWC) staff. While FWC is primarily a State agency, it is also federally funded and comments on fisheries projects (artificial reefs, etc.) in both State and Federal waters. Concerns identified by FWC were very similar to those expressed by NOAA and included the following.

- Line entanglement on the buoy or cable(s)
- Potential effects on threatened or endangered marine mammals (marine turtles, right whales, etc.)
- Maintenance requirements and frequency
- Increased marine debris potential from "lost" buoys or components (rope, plastics, etc.)
- Navigation concerns resulting from the deployed buoy or lost buoy materials
- The structure is short-term and will likely not provide any long-term habitat/benefit for marine life

As previously mentioned, the majority of these concerns result from the agency's unfamiliarity with such structures and should be thoroughly addressed at the pre-application meeting.

Interestingly, FWC staff mentioned a research component of the project may be available for grant funding from the Florida Fish and Wildlife Research Institute (FWRI). The FWRI research programs focus on obtaining data and information needed by natural resource managers and stakeholders, specifically monitoring marine resources, wildlife, and habitat (myfwc.com). Regarding the proposed project, FWRI receives grant funding specifically for sportfish and pelagic research. As such, any biological monitoring required by federal regulators or proposed by the applicant (or research partners) may be partially funded by this grant.

Taylor Engineering also interviewed University of Miami (UM) academic staff to discuss potential fisheries research projects and environmental monitoring programs that may be utilized for regulatory monitoring compliance. Given the lack of research data on pelagic fisheries stock enhancements, University staff proposed a fisheries monitoring program to track hatchery-produced and tagged pelagic species (e.g., mahi-mahi, etc.) to assess the success of stock enhancement within the region. The monitoring program would track the capture of these animals, initially released within the proposed project area, over time to better understand the benefits and success of stock enhancements. The buoy network could also incorporate a single or multiple buoys with environmental monitoring equipment to track sea surface and sub-surface temperatures, chlorophyll concentrations, currents, etc. and correlate this information with fisheries data. Notably, the Hawaii FAD system currently performs similar research. Pelagic fish movements around the islands are tracked utilizing sonic tags and recording instruments on the buoys. In summary, numerous fisheries monitoring projects are plausible; however, planning such programs for such a unique project without having an idea of regulatory goals and requirements proves difficult.

Taylor Engineering also discussed the issue of increased landing potential for bycatch and target species resulting from the installation of the buoys with UM staff. While the buoy or buoy network will likely attract fish and therefore increase the effectiveness of the catch, the total catch quota of commercial fisheries will remain the same. Essentially, the fish catch efficiency will increase, but the total catch is limited by total landing quotas set by the Federal agencies. However, because the proposed buoys will lie within a central portion of the northern Gulf of Mexico, the proposed project may result in increased commercial fishing pressure in the area of interest from Florida, Alabama, and Louisiana fishermen. Additionally, issues of bycatch primarily result from the fishing methodology. Because commercial fishing techniques (e.g., long-lines, net seining, etc.), regulated by the federal government, typically result in increased bycatch as compared to recreational fisherman, the increased commercial-scale capture rates and related bycatch may impact target species, target species juvenile fish stocks, and other, non-target fish stocks.

8.0 CONCLUSIONS

Placement of a buoy system in the deeper portions of the Gulf of Mexico is technically feasible. Available data suggest an order of magnitude $20,000 – $30,000 per buoy constructed and installed cost and a 3 – 5 year buoy lifespan. Notably, this cost is for a simple buoy system (spar buoy and concrete or steel anchor) modeled after the Hawaii buoy systems. Construction and installation of a larger-scale buoy

capable of serving as a mooring structure or data platform will likely increase the cost and installation of the structure by an order of magnitude. The County should first install a small-scale buoy or small network (1 – 3 buoys) similar to the Hawaii system and make design modifications to future deployments based on 1 – 2 years of monitoring data from the original system. Further, because deep-water buoy systems are prone to failure, the County should consider the purchase of a buoy system (buoy, mooring, and anchor) designed as a unit. This may provide the greatest amount of confidence in an optimal buoy lifespan.

Buoy placement would most likely require a USACE individual permit, a process that could take two or more years with no guarantee of success. Our review of regulatory guidelines and discussion with regulatory staff revealed no apparent reasons why a buoy system could not be permitted. However, no other similar permits are available to identify what conditions might be required for such a permit. If approved, the permit would likely include a County commitment to an ongoing maintenance and monitoring program and annual budget for the activity. A pre-application meeting with the USACE and other involved agencies might help clarify some of these unknowns and help the County reach a decision regarding the project. An environmental and/or biological (fish) monitoring program for the buoy system could help the agencies recommend the project for approval. Such a program may potentially be funded through existing sportfish restoration and environmental monitoring grants supported by FWC or other state or federal agencies. Based on conversations with academic researchers, the buoys present a unique opportunity to provide currently unavailable fisheries data. Finally, while the proposed project will likely provide increased recreational sportfishing opportunities for Okaloosa County tourists, the buoys will likely be utilized by all northern Gulf of Mexico fishermen (recreational and commercial) and may result in increased commercial and recreational fishing pressure in the area of interest. The County will not be able to regulate the use of the proposed buoy network and federal fisheries staff did indicate concern over the potential recreational fishing pressure and commercial-scale capture rates and related bycatch that may adversely impact target species, target species juvenile fish stocks and other, non-target fish stocks. Such concerns may result in a very time-consuming and challenging regulatory permitting process.

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Economic and Fiscal Impacts of the Proposed Northern Gulf of Mexico Fish Aggregating Device Network

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Executive Summary

Commissioned by the Northwest Florida Tourism Council and its partners, this report provides the projected economic and fiscal impacts associated with the deployment of an 8-buoy, anchored Fish Aggregating Device (FAD) Network (Network) positioned between 60 and 80 nautical miles off the Destin Pass in Okaloosa County. While not yet deployed, the Network is designed and permits have been submitted to the US Army Corp of Engineers (USACE). To assist the Council with funding alternatives, this report proposes a funding model for the region consisting of Baldwin, Escambia, Santa Rosa, Okaloosa, Walton, Bay, Gulf, and Franklin counties.

ES. 1. Estimated Impacts of the Northern Gulf of Mexico FAD Network, 2019 – 2025
7-year Pilot Program (8-buoy network)
(Dollar values are in millions USD)

Region	Jobs	Economic Impact (Value Added)	Local Fiscal Impact
8-County Region	368	$55.73	$2.61
Bay	114	$18.74	$0.82
Okaloosa	76	$11.85	$0.43
Baldwin	78	$10.76	$0.59
Walton	37	$5.67	$0.32
Escambia	35	$5.49	$0.22
Franklin	11	$1.48	$0.10
Santa Rosa	7	$0.93	$0.05
Gulf	9	$0.82	$0.08

Economic and Fiscal Impacts. These impact estimates are projected over a 7-year period assumed to be the life span of the Network. Over that period, it is estimated the Network will support 368 jobs, create nearly $56 million in economic impact, and generate over $2.6 million in government revenues (fiscal impact) across the 8-county region.

Proposed Funding Model. It is estimated that the Network will cost nearly $715,000 to construct, ship, deploy, and maintain over the 7-year period. Using the projected local fiscal impacts as the financial return to the region, the project is estimated to have a 2.7:1 return on investment, with an annualized rate of return of 34%, or just under $2 million. To assist the region with possible funding allocations, it is recommended that the Council and its partners consider the tiered funding model on the following page (ES. 2). The model groups regions in tiers based on the distribution of economic (value added) impacts to each region.[1]

[1] These tiers were created using the Natural (Jenks) Beaks Optimization Method to group each region into its respective tier based on its allocation of economic impacts.

ES. 2. Proposed Funding Model: Tiered Structure Based on Economic Impacts
Natural (Jenks) Breaks Statistical Groupings
7-year Return on Investment

Region	Economic Impact	Tier	Net Return (Local Fiscal Impact Less Investment)	Investment	Internal (Annualized) Rate of Return	Return on Investment
8-County Region	$55,733,716	-	$1,901,674	$712,347	34%	2.7:1
Bay	$18,738,648	Tier 1 - 25%	$646,629	$176,162	42%	*3.7:1*
Okaloosa	$11,845,474	Tier 1 - 25%	$255,754	$176,162	22%	*1.4:1*
Baldwin	$10,764,308	Tier 1 - 25%	$415,141	$176,162	31%	*2.4:1*
Walton	$5,667,778	Tier 2 - 10%	$250,162	$71,313	41%	*3.5:1*
Escambia	$5,491,234	Tier 2 - 10%	$148,608	$71,313	28%	*2.1:1*
Franklin	$1,478,069	Tier 3 - 2%	$86,548	$13,745	60%	*6.3:1*
Santa Rosa	$929,245	Tier 3 - 2%	$37,197	$13,745	34%	*2.7:1*
Gulf	$818,960	Tier 3 - 2%	$63,622	$13,745	49%	*4.6:1*

Funding Opportunities. While the model recommends allocating funding contributions by county, a number of sources are available to fund the network – not just county revenues. The RESTORE Act and Triumph Gulf Coast grants, Sport Fish Restoration Funds, research grants, and industry contributions are all funding opportunities available to the region in the coming years. Successful pursuit of these additional funding opportunities would reduce county investments and correspondingly increase the return on their actual investments.

In addition to projecting economic and fiscal impacts, proposing a funding model, and identifying regional funding opportunities, this report provides grant writers with the economic and financial information necessary for regional grant applications. The methodology used in its estimates are conservative in nature and are based on previous applicable studies. Quantitative data from federal and state sources, as well as qualitative data collected from discussions with industry practitioners and regulators inform our estimates and provide for a realistic and reproducible study.

Introduction

Matrix Design Group was commissioned by the Northwest Florida Tourism Council and its partners to study the economic and fiscal impacts associated with the deployment of a FAD Network located between 60 and 80 nautical miles (NM) off the East Pass in Destin, FL. The Network is currently envisioned to consist of eight (8) anchored buoys deployed in two linear arrays of four buoys each (see Figures 1 and 2). The team was also tasked with studying opportunities to assist the region with funding the Network's deployment and annual maintenance. Much effort has gone into studying this opportunity. A feasibility study was conducted in 2015 to determine the optimal design, location, and configuration for the Network.[2] The assessment examined comparable networks to learn best practices and to develop preliminary cost estimates. The findings guided the design and permitting application ultimately submitted in August 2016. In all, stakeholders have committed approximately $135,000 to date.

Understanding the economic and fiscal impacts is a crucial step to advancing the project. The study that follows will provide the Council with a business decision making tool allowing its members to fully understand the implications of potential funding decisions. The report is constructed in three sections:

1. Economic Analysis
2. Financial Analysis
3. Funding Opportunities

The economic analysis section provides a detailed breakout of job, value added, and gross output impacts for the Charter Fishing Industry as a whole, as well as estimated impacts associated with the deployment of the FAD network. These impacts are comprehensive in nature including direct, indirect and induced effects resulting from the economic multiplier effect. In addition to impacts to the economy, this study provides the impacts to government revenue (fiscal impacts). To calculate these estimates, the study utilizes the widely used IMPLAN input-output economic modeling software.

This assessment also includes a preliminary financial analysis examining the sources and use of funds associated with the project. While the research team

FAD buoy used by the US Virgin Islands

[2] Taylor Engineering. (2015). *Anchoring Buoy System for Fishing in the Deep Gulf Offshore Okaloosa County*. Destin: Taylor Engineering, Inc.

ultimately recommend one model, the analysis includes four alternative funding models for the Council to consider when discussing funding possibilities. Each model includes the internal rate of return (IRR) and return on investment (ROI) for each region in the study area.

Finally, the report concludes with a discussion of additional funding opportunities including grants, as well as industry and government contributions. The research team examined the funding structures of comparable FAD networks in order to provide context for the Council.

Figure 1. Location of Proposed FAD Network

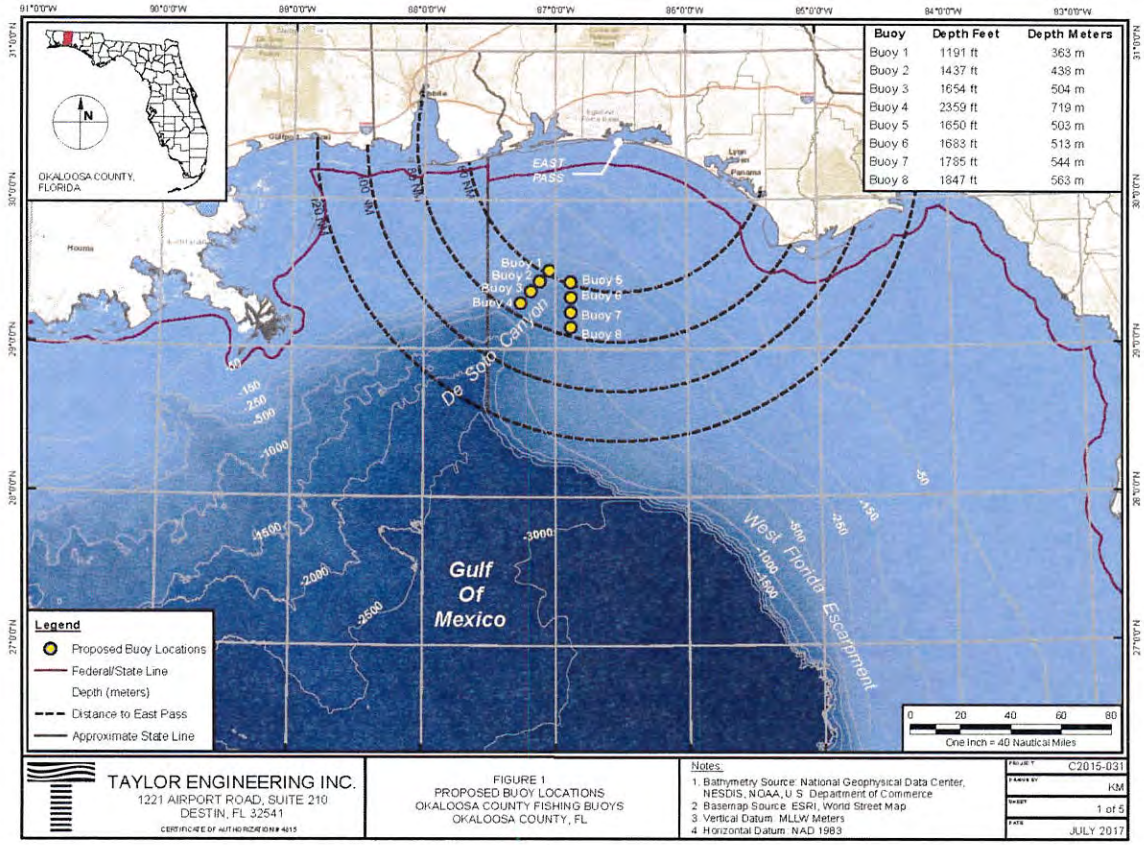
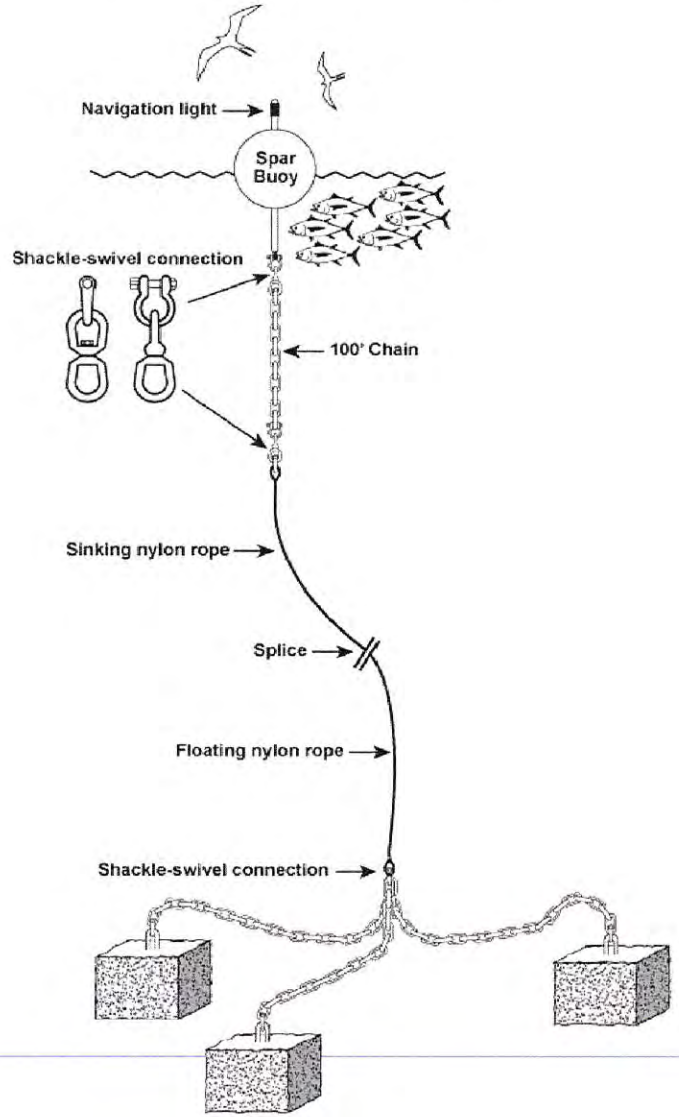


Figure 2. Example of a FAD buoy used by the State of Hawaii



Background

The use of FADs dates back hundreds of years with early fishing populations using artificial structures (typically driftwood) which would attract bait fish seeking projection from open waters, in turn attracting larger predator fish.[3] Early FADs were typically constructed of driftwood and were temporary in nature. Today, both commercial and recreational anglers use makeshift FADs to improve catch rates. However, many of these structures are illegal. The proposed FAD network assessed in this report consists of a series of 8 permitted buoys anchored to the sea floor. The design and placement of the buoys are currently being vetted by the USACE and other federal regulators. The main purpose of deploying these devices is to expand and enhance recreational and sport fishing opportunities across the region. The current purposed placement of the buoys was a collaborative effort to ensure ecological qualities, legal constraints, and public interests were not omitted.

Fish species of all types have been documented to aggregate around floating objects in the water. These objects attract baitfish that are naturally seeking shelter and therefore attract their predators like billfish, dolphin fish, and tuna. In the past, FADs have been constructed from organic materials such as logs, cork, bamboo, etc. Unlike makeshift FADs, recent FAD buoys have been designed as data collection tools to assist researchers with better understanding migration patterns of certain pelagic species.

[3] For a detailed explanation of the effectiveness of FADs see Taylor Engineering's feasibility study - *Anchoring Buoy System for Fishing in the Deep Gulf Offshore Okaloosa County*.

Places like the Dominican Republic and Costa Rica have unregulated use of FADs for both recreational fishing and commercial fishing. For many Caribbean coastal communities, fisheries are an important source of food and income, so much that reef fisheries have been exploited in turn, creating a bigger trend for the use of FADs. Historically, FADs were privatized with individuals setting out an FAD, fishing the FAD, and taking it back with them. However, in recent years governments have deployed public FADs that are not associated with individual rights, in turn opening up expanded fishing opportunities to the public and also decreasing frequent conflicts between anglers.

Along the Gulf Coast the best options for anglers interested in offshore sport fishing opportunities is to travel to the oil rig platforms concentrated in the western Gulf of Mexico. For counties east of these waters, a single day trip can be difficult, if not impossible. The proposed FAD network can serve as legal, monitored structures that inevitably decrease the pollution (makeshift FADs) some anglers illegally deposit into Gulf waters. The buoys are designed to have radar reflection, GPS devices, and options to carry additional scientific equipment. The placement of the buoys was developed with the intention of enhancing recreational fishing opportunities. As presented in Figure 1, the buoys are located within the Desoto Canyon Closed Area for commercial longline fishing; therefore, reducing the risk of incentivizing commercial (over)fishing. [4]

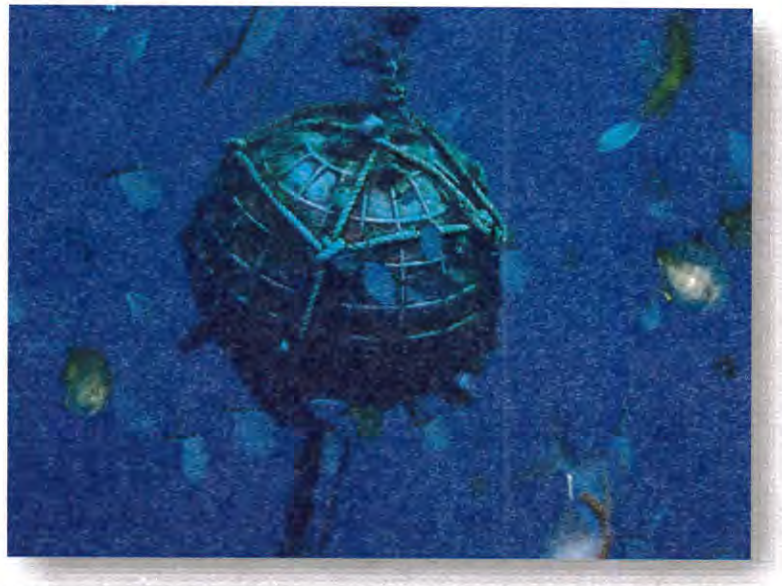
The benefits of the FAD Network are multi fold. First, the Network can potentially benefit inshore fisheries by shifting the pressure from these areas to more abundant offshore pelagic populations. FADs can also create new habitat, turning the once desert floor of the Gulf of Mexico into a thriving ecosystem. From an economic standpoint, the Network can open sport fishing markets eastward along the Alabama and Florida panhandles – specifically for counties currently out of reach of the oil platforms. For counties that specialize in inshore reef fishing, the Network can enhance and expand their charter fishing industries by way of increased daily excursions.

[4] Taylor Engineering. (2015). *Anchoring Buoy System for Fishing in the Deep Gulf Offshore Okaloosa County*. Destin: Taylor Engineering, Inc.

Comparable Regional FAD Networks

To the best of our knowledge, the only legal, regulated FAD networks in American waters are in Hawaii, US Virgin Islands (USVI), America Samoa, Puerto Rico, and Guam. Both Puerto Rico and the USVI's networks were funded using federal Sports Fish Restoration Funds and each has an active data collection process to assist local organizations with research and monitoring.

US Virgin Island FAD Network. The USVI currently has six buoys (2 submerged and 4 surface) deployed with a total of 41 (22 in St Croix and 19 in St. Thomas-St. John) permitted locations. This effort is overseen by the USVI Department of Planning and Natural Resources (DPNR). Deployment occurred in 2016 with the intention of shifting fishing pressures from the heavily fished inshore areas to the more abundant offshore pelagic sport fishing species.[5] The DPNR is still early in its data collection efforts, but they do administer self-reporting surveys to anglers using the network. The electronic survey asks anglers to report basic information such as which buoy the catch occurred, effort exerted (number anglers, lines, hooks, hours, etc.), gear, weight, and type of fish caught.



US Virgin Islands submerged FAD (T5) showing algal growth on the buoy and aggregations of several fish species.

Puerto Rico FAD System. The Puerto Rico Department of Natural Resources (PRDNR) deployed 10 buoys between 2015 and 2017. This network is a linear array located approximately 10 NM off the coast of San Juan Bay. Much like the USVI, PRDNR and its partners are actively engaged in data collection regarding catch rates and usage. Moreover, they are working with the nonprofit research organization *Beyond our Shores* to, among other research activities, monitor migration patterns of pelagic species located in and around the network. Of important note, organizers of the International Billfish Tournament (IBT) in San Juan report that since the deployment of the FAD network sport fishing catch rates have increased, and one academic reported that the charter fishing industry throughout the region has been revitalized.[6]

[5] http://viconsortium.com/virgin-islands-2/d-p-n-r-to-deploy-fish-aggregating-devices-throughout-territorys-waters/
[6] http://sanjuaninternational.com/V3/puerto-rico-fads-luring-billfish-and-marine-life/

Economic Analysis

The scope of our economic analysis is to understand the total economic impacts associated with the deployment of a FAD network consisting of 8 anchored buoys between 60 and 80 NM from the Destin Pass. Our study focuses on the Charter Fishing Industry and does not include impacts tied to private recreational anglers who may use the network. We utilize the IMPLAN input-out economic modeling software to estimate both the economic (jobs, value added, sales) and fiscal (government revenue) impacts associate with the Charter Fishing Industry's use of the FAD network. As will be discussed in the following pages, a variety of data sources and methods were used to construct the baseline Charter Fishing economy. From this baseline, economic and fiscal impacts are estimated and projected over a 7-year period.[7]

Methodology

A particular challenge to this study is estimating the economic and fiscal impacts associated with a project that has yet to be executed. Traditionally, when calculating economic impacts of a particular event where data is not readily available from federal, state, or local sources, surveys are conducted of consumers or participants to collect information on expenditures, capital investment, length of stay, party size, etc. However, as the proposed FAD network has not yet been deployed, we must use the best available data to provide fidelity and rigor to our estimates. Much of the data used to construct our estimates are provided by federal and regional sources. Moreover, our team spoke with industry practitioners and representatives from regional planning agencies with firsthand experience in administering a FAD network.

Like traditional economic impact assessments, our study includes a variety of spending flows which allow us to model the direct, indirect, and induced effects of the Charter Fishing Industry across the 8-county region (Baldwin, Escambia, Santa Rosa, Okaloosa, Walton, Bay, Gulf, and Franklin counties). These spending flows can be grouped in the following two categories:

1. Operational expenditures of the regional Charter Fishing Fleet
2. Local expenditures from patrons of the regional Charter Fishing Industry

Each spending category has numerous sub categories that impact each region's economy in different ways. As each region in our study area has a unique economic make-up, so too will each region be impacted differently by their respective Charter Fishing industries. In the pages that follow, we present each spending flow, the data source from which it was collected, and the rational as to why we chose to use it. To help streamline the report, a number of appendices are included which provide economic data too detailed to include in the body of the narrative.

[7] A 7-year period was selected due to the average life span of an anchored buoy.

Annual Patrons and Operational Expenditures

First, a baseline must be constructed which estimates the total economic impacts of the Charter Fishing Industry prior to the deployment of a FAD network. Because no comprehensive database currently exists containing Charter Fishing patron counts and fleet spending patterns for each of the counties in our study area, we leveraged data from a 2014 Haas Center study that examined the economic impacts of Charter Fishing and Recreational Boating within the Destin Harbor.[8] This study utilized intercept and online surveys to collect operational expenditures and patron counts for the Harbor's charter fishing fleet (See Appendix 1). Haas reported the Destin Harbor Charter Fishing industry attracted 117,151 patrons in 2014 with nearly $17 million in operational expenditures (inclusive of payroll).

Because this study only provided fleet operations and patron data for Okaloosa County (Destin Harbor), in order to estimate similar data for each region in our study, our team was presented with two options. The first option was to use limited access charter fishing permits for each county as a means of determining how to apply operational and patron data to each region. Table 1 provides the number of limited access permits within each region. As can be seen from the table, Baldwin, Bay, and Okaloosa counties are roughly equal with each containing approximately 25% of the regions total permits – 75% in all.

Table 1. Gulf of Mexico Charter Boat Permits
Limited Access Pelagic and Reef Fish

Region	Count	Distribution
Baldwin	90	25.4%
Bay	86	24.3%
Okaloosa	85	24.0%
Escambia	28	7.9%
Franklin	19	5.4%
Santa Rosa	18	5.1%
Walton	18	5.1%
Gulf	10	2.8%
Total	**354**	**100.0%**

Source: NOAA Fisheries, Southeast Regional Office

While the use of permitting data seems to be a rational approach to allocating spending impacts across each region, the weakness with this approach is that there is no way to determine whether or not all boats are producing the same quantities of economic output relative to each other. In other words, the productivity level of each boat is unknown and thus so too are the output levels of the region. Therefore, our second option was to use a more useful set of data produced by the US Bureau of Economic Analysis (BEA). The BEA produces economic output ratios which compare output levels for each industry in the economy.

[8] Haas Center for Business Research and Economic Development. (2014). *Economic Impact Analysis of Charter Fishing and Recreational Boating along the Destin Harbor.* Pensacola: The University of West Florida.

These data are provided at the six digit NAICS and county level by the economic modeling firm EMSI.[9] Our study uses these ratios as a means to more accurately reflect the charter fishing fleet production (economic output) of each region in our analysis.

Table 2 presents these ratios as both a regional distribution and baseline distribution to Okaloosa County (the county for which we have both operational and patron data). Our team used NAICS 487210 Scenic and Sightseeing Transportation, Water industry output to capture the Charter Fishing Boat operations within each respective region. While there are also weaknesses associated with this methodology (such as capturing other water-based recreational activities), we believe this approach more accurately reflects output shifts across regions. Based on the regional distribution of output, we have constructed ratios using Okaloosa County patron and expenditure baseline data. This baseline allows us to estimate with a reasonable level of certainty patrons spending and operational expenditures across the 8-county region.

Table 2. Output Ratios for Scenic and Sightseeing Transportation, Water NAICS 487210

Region	Regional Distribution	Okaloosa County Baseline Output Ratio
Bay	31.6%	1.35
Baldwin	26.6%	1.14
Okaloosa	23.4%	1.00
Walton	6.6%	0.28
Escambia	5.5%	0.24
Santa Rosa	3.8%	0.16
Gulf	1.2%	0.05
Franklin	1.2%	0.05

Source: Economic Modeling Specialist, Inc.; US Bureau of Economic Analysis

Patron Spending Patterns

In addition to patrons and operational data, our study includes the annual spending patterns of charter fishing patrons. The US Census Bureau provides spending data on Florida nonresident anglers by way of the US Fish and Wildlife's Fishing, Hunting, and Wildlife Survey.[11] These data were adjusted downward to remove reported expenditures on charter fishing activities. As our study uses Haas Center charter fishing operational data, we removed these expenditures in order to prevent double

Table 3. Annual Nonresident Angler (Patron) Expenditures, 2011[10]

Spending Type	Dollars	Distribution
Lodging	$197.2	26.3%
Food & Beverage	$141.8	18.9%
Transportation	$179.9	24.0%
Transportation w/in Destination	$93.1	12.4%
Retail	$139.0	18.5%
Total	**$751.0**	**100.0%**

Source: US Census Bureau, US Fish and Wildlife Services

counting as well as to provide a more refined estimate (see Table 3 for angler expenditure data). It should be noted that the US Fish and Wildlife's Fishing, Hunting, and Wildlife Survey does not include any additional annual spending from members of the anglers' party that do not participate in charter fishing activities but still spend money in the regional economy. As such, our methodology is inherently conservative in that this additional spending is not included in our estimates.

Using the above data points to construct baseline estimates, Table 4 presents the direct expenditures associated with the 8-county regions' Charter Fishing Industry. In all, it is estimated the region attracted just over 500,500 charter fishing patrons in 2014. These patrons accounted for $376 million in direct spending and drive an additional $72 million in Charter Fleet operational expenditures equating to just under $450 million across the 8-county region. These data are used as direct inputs into the IMPLAN model.

Table 4. Direct Expenditures Associated with the Regional Charter Fishing Industry Visitor and Operational Spending, 2014

(Dollar Values are in Millions USD)

Region	Annual Patrons	Patron Spending	Operational Expenditures	Total Spending
8-County Region	500,544	$376.00	$71.93	$447.93
Bay	*158,379*	*$118.97*	*$22.76*	*$141.73*
Baldwin	*133,254*	*$100.10*	*$19.15*	*$119.25*
Okaloosa	*117,151*	*$88.00*	*$16.83*	*$104.84*
Walton	*33,122*	*$24.88*	*$4.76*	*$29.64*
Escambia	*27,498*	*$20.66*	*$3.95*	*$24.61*
Santa Rosa	*19,064*	*$14.32*	*$2.74*	*$17.06*
Gulf	*6,163*	*$4.63*	*$0.89*	*$5.52*
Franklin	*5,913*	*$4.44*	*$0.85*	*$5.29*

Source: Haas Center; US Fishing and Wildlife Commission; Distribution of expenditures based on US BEA output ratios.

[9] The North American Industry Classification System (NAICS) is the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy.

[10] The US Census Bureau conducted its most recent Fishing, Hunting, and Wildlife survey in 2011. To adjust for inflation, 2011 dollars values was used as inputs then inflated internally within the model providing outputs as 2016 values.

[11] US Department of Interior; US Fish and Wildlife Service; US Department of Commerce. (2011). *2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation*. Washington DC: US Census Bureau.

Baseline Economic Impacts of the Charter Fishing Industry

Table 5 presents the baseline total economic impacts associated with the regional Charter Fishing industry. These estimates include the direct, indirect and induced economic impacts resulting from the direct expenditures in Table 4. This baseline represents the economic benefits generated from the regional Charter Fishing industry prior to the deployment of the 8-bouy FAD network. This baseline is constructed to provide a point of departure when estimating the impacts tied to the FAD network. As the table demonstrates, the Charter Fishing industry supports nearly 7,000 jobs, provides $220 million in labor income, $340 million in economic (value added) impact, and $600 million in gross economic output (industry sales). While it is easy to claim the gross output as the economic impact the industry produces for the region, the true economic impact is the Value Added component which represents Gross Output less the industry's intermediate consumption (consumption of goods and services purchased from other industries or imported). In short, valued added impacts consist of employee compensation, taxes on production, and gross profit (gross operating surplus). Appendix 2 at the back of this report provides a breakout of the direct, indirect and induced baseline impacts for each county in the study area.

Table 5. Total Baseline Economic Impacts by Region Estimates, 2016
Pre-FAD Deployment
(Millions USD)

Region	Jobs Supported	Labor Income	Value Add (Economic Impact)	Gross Output (Sales)
8-County Region	6,811	$222.41	$341.62	$605.70
Bay	*2,400*	*$82.67*	*$128.75*	*$226.03*
Okaloosa	*1,608*	*$53.90*	*$81.28*	*$149.33*
Baldwin	*1,723*	*$52.29*	*$80.69*	*$138.05*
Walton	*396*	*$13.07*	*$19.87*	*$34.67*
Escambia	*379*	*$12.58*	*$18.95*	*$33.85*
Santa Rosa	*165*	*$4.41*	*$6.73*	*$12.25*
Franklin	*80*	*$2.26*	*$3.41*	*$6.81*
Gulf	*62*	*$1.23*	*$1.93*	*$4.71*

Dollar values are in 2016 Millions USD

Economic Impacts of FAD Network

Because the FAD network has yet to be deployed, there is no current data from which to impute economic and fiscal impacts associated with an 8-bouy network. In order to compensate for this deficit, our team reached out to various regions that have deployed similar FAD networks. As

these regions are still relatively early in their data collection efforts, they were unable to share any meaningful economic data; however, they did report anecdotal increases of 5% - 15% in the region's sports fishing industry. As such, our team compiled three tiers of possible impact scenarios: 5%, 10%, and 15% increases from the baseline.

For each scenario, our team ran septate IMPLAN simulations using the respective increases in direct expenditures (see table 4). These simulations provided impact estimates for each scenario. Appendix 3 presents the results of each tiered scenario. However, to produce a single useable estimate, we have developed a "merged" estimate where we combined the three scenarios using our informed judgement. During our data collection process we spoke with Charter Fishing Captains to gauge the realism in our tiered scenarios. Feedback from them indicated that for the regions with larger charter fishing economies (Bay, Baldwin, and Okaloosa) a 5% increase overtime was a reasonable estimate. For midsize regions that are geographically closer to the FAD array (Escambia and Walton) a 10% estimate was chosen. Eastern most regions (Franklin and Gulf) are estimated to experience a 15% increase as offshore sports fishing opportunities are currently limited in these regions due to the extensive distances required to travel to the oil platforms off the coast of Louisiana; as such, a FAD array closer to their fleets would have a larger percentage increase.[12] Finally, for Santa Rosa County (both a small charter fishing economy and geographically close to the proposed FAD array), we assume only a 5% increase in direct expenditures as there is currently no pass allowing its fleet to easily reach the array.[13]

Table 6 provides total economic impact estimate for this merged scenario. It is estimated that a fully deployed, 8-bouy FAD network would support 368 jobs, generate nearly $12 million in labor income, $18 million in economic impact, and $2 million in state and local tax revenue, with $840,000 being retained at

[12] It is import to keep in mind, that for regions with smaller charter fishing economies, it is easier to obtain larger percentage increases due to the already low baseline estimates.

[13] This is also the case for Walton County; however, we assume a 10% increase is reasonable as the county currently hosts fishing tournaments which could be positively impacted by the FAD network.

the county level.[14] As can be seen from the table, the ratio between jobs, value added, and fiscal impacts do not represent a linear relationship; therefore, while certain regions experience larger economic (value added) impacts they may support fewer jobs and realize lesser fiscal impacts. An example of this is Okaloosa County compare to Baldwin County. While the FAD network is estimated to support 76 jobs in Okaloosa and generate $3.79 million in value added impacts, Baldwin County is expected to experience job impacts of 78 with value added impacts of $3.45 million. This is primarily due to the aggregate industrial productivity differences between Okaloosa and Baldwin counties, suggesting that the Okaloosa economy is slightly more productive, on average, than the Baldwin economy.

Table 6. Total Economic Impact Estimate of FAD Network – Merged Scenario (5.24% Above Baseline)
Ranked by Economic Impact
(Dollar Values in Millions USD)

Region	Jobs Supported	Labor Income	Value Added (Economic Impact)	Total Fiscal Impact (State and Local)	Local Fiscal Impact
8-County Region	368	$11.80	$17.90	$2.00	$0.84
Bay	114	*$3.92*	*$6.00*	*$0.63*	*$0.26*
Okaloosa	76	*$2.56*	*$3.79*	*$0.37*	*$0.14*
Baldwin	78	*$2.25*	*$3.45*	*$0.49*	*$0.19*
Walton	37	*$1.22*	*$1.82*	*$0.20*	*$0.10*
Escambia	35	*$1.19*	*$1.76*	*$0.18*	*$0.07*
Franklin	7	*$0.32*	*$0.47*	*$0.05*	*$0.03*
Santa Rosa	11	*$0.20*	*$0.30*	*$0.04*	*$0.02*
Gulf	9	*$0.17*	*$0.26*	*$0.04*	*$0.02*

[14] We have no data that currently suggests output per buoy. Because networks in Puerto Rico and USVI are similar in quantity, we assume a fully deployed network of 8 buoys would provide these impacts. It is unknown how the deployment of fewer buoys would impact our estimates.

To be conservative in our estimates, we assume these impacts are not fully realized in year 1 of the Network's deployment, but rather slowly increasing over a five-year period to ultimately reach the estimates provided in the above table. While the region's Charter Fishing Industry has been around for several decades, we consider the modeling of impacts associated with a yet to be deployed FAD network similar to that of an up-start company. As such, we apply a simple phased business lifecycle approach to our analysis. Table 7 presents our assumptions for each development phase of the proposed 8-bouy network with a 7-year lifespan.

Table 7. Incubation and Acceleration Period Assumptions
8-Buoy FAD Network w/ 7-year Life Span

Year – Phase	Percent of Merged Impacts (Table 6)	Increase from Baseline (Table 5)
1 – Incubation	5%	0.26%
2 – Acceleration	25%	1.31%
3 – Acceleration	50%	2.62%
4 – Acceleration	75%	3.93%
5 – Maturity	100%	5.24%
6 – Maturity	100%	5.24%
7 – Maturity	100%	5.24%

We assume an incubation phase during year 1 of the deployment equaling 0.26% above baseline estimates (see Table 5). During this phase, the region would be marketing the Network and possibly developing or expanding regional fishing tournaments to take advantage of the increased catch rates. During years 2 through 4 the use of the Network is expected to accelerate with baseline increases of 1.31% (year 2), 2.62% (year 3), and 3.93% (year 4). By year 5, we assume the network is generating 100% of our merged scenario impacts. We hold these increases at 5.24% above baseline impacts for the remaining years in our projection (years 5, 6, and 7).

Based on the assumptions above, Tables 8 and 9 provide the nominal annual economic and job impact estimates of the FAD network. However, as we project these impacts over a 7-year period, an additional step must be taken to adjust the value of each annual impact for inflation and risk. The concept of time value of money informs us that money earned today is more valuable than money earned in the future. Because of the impossibility of seeing into the future with any level of certainty, there is always a certain level of risk associated with economic and financial projections (in this case the economic impacts associated with the FAD network) and this risk compounds over the time horizon of the projection.

Table 8. Annual Economic (Value Added) Impacts of the FAD Network– Nominal Values
8-bouy, 7-year Life Span
(Thousands USD)

Region	2019	2020	2021	2022	2023	2024	2025
8-County Region	$892	$4,462	$8,925	$13,387	$17,850	$17,850	$17,850
Bay	$300	$1,500	$3,001	$4,501	$6,001	$6,001	$6,001
Okaloosa	$190	$948	$1,897	$2,845	$3,794	$3,794	$3,794
Baldwin	$172	$862	$1,724	$2,586	$3,447	$3,447	$3,447
Walton	$91	$454	$908	$1,361	$1,815	$1,815	$1,815
Escambia	$88	$440	$879	$1,319	$1,759	$1,759	$1,759
Santa Rosa	$15	$74	$149	$223	$298	$298	$298
Franklin	$24	$118	$237	$355	$473	$473	$473
Gulf	$13	$66	$131	$197	$262	$262	$262

Table 9. Total Job Impacts by Year – Nominal Values
8-buoy, 7-year Life Span

Region	2019	2020	2021	2022	2023	2024	2025
8-County Region	18	92	184	276	368	368	368
Bay	*6*	*29*	*57*	*86*	*114*	*114*	*114*
Okaloosa	*4*	*19*	*38*	*57*	*76*	*76*	*76*
Baldwin	*4*	*19*	*39*	*58*	*78*	*78*	*78*
Walton	*2*	*9*	*19*	*28*	*37*	*37*	*37*
Escambia	*2*	*9*	*18*	*27*	*35*	*35*	*35*
Santa Rosa	*0*	*2*	*4*	*6*	*7*	*7*	*7*
Franklin	*1*	*3*	*6*	*8*	*11*	*11*	*11*
Gulf	*0*	*2*	*4*	*7*	*9*	*9*	*9*

Note: Unlike economic impacts, job impacts are not cumulative in nature. For example, it would be incorrect to sum jobs across each year. Total job impacts (368) are realized in 2023 and held constant through 2025.

In order to adjust for this risk, we conduct a discount cash flow (DCF) analysis wherein we treat the economic impacts presented in Table 8 as net cash flows being received by the region.[15] Simply put, a DCF analysis applies a discount factor to all cash flows contained in the projection period. This technique converts future cash flows (value added impacts) into present values thus allowing for a risk-adjusted valuation of the proposed project.[16] While we are conservative in our estimates, we believe there are genuine risks associated with achieving the impacts in Table 8. Permitting and funding delays, potential recessions, ineffective marketing strategies, and/or acts of god all can adversely affect our estimates. As such, we have chosen a relatively aggressive discount factor of 10% to compensate for these and other unforeseen risks. We further assume that each county is subjected to the same risk factors over the projection period.

Table 10 presents the net present values of the impacts presented in Table 8. As can be seen, our estimates peak in 2023 (year 5) and decline in the remaining out-years. This is due to us holding the estimates steady from 2023 onward. As time increases, so too do the compounding effects of risk inherent in DCF analysis. Given this risk, over the 7-year period, the FAD network is estimated to generate nearly $56 million in economic (value added) impacts to the 8-county regional economy.

Fiscal Impact Analysis

While economic (value added) impact is a metric of economic growth within a given industry (assuming all things remain constant), fiscal impacts measure the gross increase in government revenues to local authorities (states, counties, municipalities, special taxing districts, etc.).

[15] We are able to consider these "net" as the value added impacts presented in Table 8 are net of intermediate inputs (gross operating costs) and reflect the gross profit generated by the industry.

[16] In this case, the DCF analysis converts future cash flows to net present value as the value added impacts (cash flows) presented in Table 8 are net of intermediate inputs (gross operating costs).

Table 10. Annual Economic (Value Added) Impacts of the FAD Network – Discounted Values (Adjusted for Inflation and Risk)
8-bouy, 7-year Life Span
(Thousand USD)

Region	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
8-County Region	$892	$4,057	$7,376	$10,058	$12,192	$11,083	$10,076	$55,734
Bay	*$300*	*$1,364*	*$2,480*	*$3,382*	*$4,099*	*$3,726*	*$3,388*	*$18,739*
Okaloosa	*$190*	*$862*	*$1,568*	*$2,138*	*$2,591*	*$2,356*	*$2,141*	*$11,845*
Baldwin	*$172*	*$784*	*$1,425*	*$1,943*	*$2,355*	*$2,141*	*$1,946*	*$10,764*
Walton	*$91*	*$413*	*$750*	*$1,023*	*$1,240*	*$1,127*	*$1,025*	*$5,668*
Escambia	*$88*	*$400*	*$727*	*$991*	*$1,201*	*$1,092*	*$993*	*$5,491*
Franklin	*$24*	*$108*	*$196*	*$267*	*$323*	*$294*	*$267*	*$1,478*
Santa Rosa	*$15*	*$68*	*$123*	*$168*	*$203*	*$185*	*$168*	*$929*
Gulf	*$13*	*$60*	*$108*	*$148*	*$179*	*$163*	*$148*	*$819*

The section that follows provides both nominal (non-risk-adjusted) and discounted (risk-adjusted) fiscal impacts to each county resulting from the FAD network. The fiscal impacts presented below are based on the same ramp-up assumptions presented in Table 7. For consistency and reproducibility, we have used the IMPLAN tax impact model outputs associated with the economic impacts provided in the previous section.

Table 11 provides local fiscal impacts for the region and each county included in the study area. The reader may notice the nonlinear relationship between economic (value added) impacts in Table 8 and the fiscal impacts presented below. Much like how industrial productivity levels vary from county to county and state to state, so too do taxing structures. Taxation levels on property, industry sales, business occupancy, county/municipal pensions, and other sources of government revenue (i.e. licenses and registrations) are all highly sensitive to political boundaries. As such, the levels of government revenue generated by the economic (value added) impact estimates in Table 8 will vary based on these sensitivities, all of which are captured in the IMPLAN tax impact model. Table 12 provides these risk-adjusted impacts. Given our assumed risk profile, the region is estimated to generate an additional $2.6 million in government revenue over the 7-year period.

Table 11. Nominal Local Fiscal Impacts Associated with the FAD Network, 2019 – 2025

(Thousands USD)

Region	2019	2020	2021	2022	2023	2024	2025	Total
8-County Region	$41.86	$209.30	$418.59	$627.89	$837.19	$837.19	$837.19	**$3,809.20**
Bay	$13.17	$65.84	$131.67	$197.51	$263.34	$263.34	$263.34	***$1,198.21***
Baldwin	$9.46	$47.30	$94.60	$141.90	$189.20	$189.20	$189.20	***$860.88***
Okaloosa	$6.91	$34.54	$69.08	$103.62	$138.16	$138.16	$138.16	***$628.62***
Walton	$5.15	$25.73	$51.47	$77.20	$102.93	$102.93	$102.93	***$468.34***
Escambia	$3.52	$17.60	$35.20	$52.81	$70.41	$70.41	$70.41	***$320.36***
Franklin	$1.60	$8.02	$16.05	$24.07	$32.10	$32.10	$32.10	***$146.04***
Gulf	$1.24	$6.19	$12.38	$18.56	$24.75	$24.75	$24.75	***$112.63***
Santa Rosa	$0.81	$4.07	$8.15	$12.22	$16.29	$16.29	$16.29	***$74.12***

Table 12. Discounted Fiscal Impact Associated with FAD Network, 2019 – 2025
Adjusted for Inflation and Risk

(Thousands USD)

Region	2019	2020	2021	2022	2023	2024	2025	Total
8-County Region	$41.86	$190.27	$345.94	$471.74	$571.81	$519.83	$472.57	**$2,614.02**
Bay	*$13.17*	*$59.85*	*$108.82*	*$148.39*	*$179.87*	*$163.52*	*$148.65*	***$822.26***
Baldwin	*$9.46*	*$43.00*	*$78.18*	*$106.61*	*$129.23*	*$117.48*	*$106.80*	***$590.77***
Okaloosa	*$6.91*	*$31.40*	*$57.09*	*$77.85*	*$94.36*	*$85.79*	*$77.99*	***$431.38***
Walton	*$5.15*	*$23.39*	*$42.53*	*$58.00*	*$70.30*	*$63.91*	*$58.10*	***$321.40***
Escambia	*$3.52*	*$16.00*	*$29.09*	*$39.67*	*$48.09*	*$43.72*	*$39.74*	***$219.84***
Franklin	*$1.60*	*$7.29*	*$13.26*	*$18.09*	*$21.92*	*$19.93*	*$18.12*	***$100.22***
Gulf	*$1.24*	*$5.63*	*$10.23*	*$13.95*	*$16.91*	*$15.37*	*$13.97*	***$77.29***
Santa Rosa	*$0.81*	*$3.70*	*$6.73*	*$9.18*	*$11.13*	*$10.11*	*$9.20*	***$50.86***

Dollars are in thousands USD. Estimates assume a 10% discount rate.

Financial Analysis

To assist the Northwest Florida Tourism Council and its partners, a preliminary financial model is provided. The model includes potential funding mechanisms (Sources of Funds) and total costs (Uses of Funds) associated with the deployment and maintenance of the proposed 8-buoy network. The model is designed to evolve over time as funding mechanisms become available and as costs are realized.

As is to be expected, the major cost driver of the project is the construction, shipping, and deployment of the anchored buoys. Table 13 provides the costs associated with each of the eight proposed buoys. As the table illustrates, the construction and deployment are 90% of all costs. While shipping is estimated at only 10%, this estimate is based on the shipping of at least 4 buoys. An increasing economy of scale is realized as more buoys are shipped together. The same principle holds true for deploying each buoy – a cost savings can be realized as the number of buoys deployed in the same run increases. Each buoy is estimated to cost approximately $67,000 for a total of $536,000 for the 8-buoy network.

Table 13. Preliminary Buoy Costs, 8-buoy FAD Network, 2017

Cost Type	Buoy 1	Buoy 2	Buoy 3	Buoy 4	Buoy 5	Buoy 6	Buoy 7	Buoy 8	Total
Buoy, Mooring, Light, GPS[17]	$35,000	$35,000	$35,000	$35,000	$35,000	$35,000	$35,000	$35,000	**$280,000**
Shipping[18]	$7,000	$7,000	$7,000	$7,000	$7,000	$7,000	$7,000	$7,000	**$56,000**
Deployment[19]	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000	**$200,000**
Sub-total	**$67,000**	**$67,000**	**$67,000**	**$67,000**	**$67,000**	**$67,000**	**$67,000**	**$67,000**	**$536,000**

All dollar values are in 2016 USD

Note: All costs were provided by Taylor Engineering, are preliminary, and represent rough order-of-magnitude estimates.

The remaining costs – both realized and projected – and funding sources are presented in Table 14. This financial statement captures potential sources of funds including tourist development taxes, grants, and private contributions. The statement also presents all uses of funds such as the soft costs realized to date (feasibility study, design and permitting actions, and the economic and fiscal impact study), as well as all projected hard costs. Future costs (2018 and beyond) are inflated at an annual 2% escalator to capture national and local inflationary effects.

[17] This estimate is an average price for the buoy and mooring system utilizing the range of proposed buoy location depths. The prices assume a simplistic buoy system with radar reflector, light, and GPS. Additional meteorological/monitoring equipment will increase the buoy and deployment costs.
[18] This estimate assumes a minimum of 4 buoys will be deployed. Unit costs for individual buoy deployment or for less than 4 buoys in a single mobilization will likely be higher.
[19] This estimate includes annual GPS monitoring services as well as annual site inspections/observations of the proposed 8-buoy system.

Table 14. Northern Gulf of Mexico Fish Aggregating Device Network
Preliminary Financial Statement
7-year Pilot Program containing 8-buoy Network

Inflation Factor	**1.00**	**1.00**	**1.00**	**1.00**	**1.02**	**1.04**	**1.06**	**1.08**	**1.10**	**1.13**	**1.15**	
2%	**Yr 1**	**Yr 2**	**Yr 3**	**Yr 4**	**Yr 5**	**Yr 6**	**Yr 7**	**Yr 8**	**Yr 9**	**Yr 10**	**Yr 11**	**Total**
Source of Funds	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	
Tourist Development Taxes	$13,522	$76,599	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$90,121**
NWF Tourism Council	$ -	$ -	$45,980	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$45,980**
Triumph Gulf Coast	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Restore Impact Component	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Sports Fishing Restoration Grant	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
NRDA Grant	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Tournament Sponsorships	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Private Contributions	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Research Grants	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Other	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Sub-total	**$13,522**	**$76,599**	**$45,980**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$136,101**
Uses of Funds												
Feasibility Study	$13,522	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$13,522
Design and Permitting	$ -	$76,599	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$76,599
Economic Analysis	$ -	$ -	$45,980	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$45,980
Buoy, Mooring, Light, GPS	$ -	$ -	$ -	$ -	$291,312	$ -	$ -	$ -	$ -	$ -	$ -	$291,312
Shipping	$ -	$ -	$ -	$ -	$58,262	$ -	$ -	$ -	$ -	$ -	$ -	$58,262
Deployment	$ -	$ -	$ -	$ -	$208,080	$ -	$ -	$ -	$ -	$ -	$ -	$208,080
Annual Maintenance	$ -	$ -	$ -	$ -	$20,808	$21,224	$21,649	$22,082	$22,523	$22,974	$23,433	$154,693
Misc. Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Sub-total	**$13,522**	**$76,599**	**$45,980**	**$ -**	**$578,462**	**$21,224**	**$21,649**	**$22,082**	**$22,523**	**$22,974**	**$23,433**	**$848,447**

Net Cash Flows	$ -	$ -	$ -	$ -	$(578,462)	$(21,224)	$(21,649)	$(22,082)	$(22,523)	$(22,974)	$(23,433)	$(712,347)

To date, just over $135,000 has been spent by Okaloosa County ($90,121 for Feasibility Study and Design and Permitting) and the Northwest Tourism Council ($45,980 Economic Analysis). Our model assumes construction, shipping, and deployment occurs in 2019 due to the prolonged nature of the permitting process. As of this writing, it is estimated that the permitting process, which began in 2016, will not be complete for another 8 – 12 months (summer or fall of 2018). In addition to the cost associated with construction, shipping, and deployment of the buoys, there is also a $20,000 annual maintenance and monitoring cost built into the model.

Return on Investment

There are numerous ways in which return on investment (ROI) can be calculated. While the equation of ROI is simple:

$$\frac{\text{Net Return (Return minus Investment)}}{\text{Investment}}$$

Determining both return and investment can oftentimes be difficult as analysts have differing views on what is appropriate for each variable. For the purposes of our study, we have chosen to use the local fiscal impacts presented in Table 12 at gross returns to each region. However, each region may consider different metrics (such as economic impact or labor income) as important returns. To provide clarity and consistency, we have chosen local fiscal impacts in order to provide the Council with an understanding of how an 8-buoy FAD network is projected to impact their respective region's (county, municipalities, special taxing districts, etc.) government revenue over a 7-year period.

While the gross return (local fiscal impacts) is known, what is unknown is how the costs (investment) associated the deploying and maintaining the network will be distributed across each region, and this distribution impacts the ROI each region is projected to receive. Ultimately, this decision resides with the Council and its funding partners; however, to assist stakeholders with these discussions we have developed the following four funding models using alternative distribution methods:

Alternative Funding Models

1. Straight line distribution of fiscal impacts
2. Straight line distribution of economic impacts
3. Tiered distribution based on Natural (Jenks) Breaks statistical grouping analysis of fiscal impacts
4. Tiered distribution based on Natural (Jenks) Breaks statistical grouping analysis of economic impacts

Table 15. Alternative 1: Strait line Distribution of Fiscal Impacts
7-year Return on Investment

Region	Net Return (Local Fiscal Impact Less Investment)	Distribution of Fiscal Impacts	Investment	Internal Rate of Return	Return on Investment
8-County Region	$1,901,674	100%	$712,347	34%	2.7:1
Bay	$598,186	*31%*	$224,074	*34%*	2.7:1
Baldwin	$429,780	*23%*	$160,991	*34%*	2.7:1
Okaloosa	$313,828	*17%*	$117,557	*34%*	2.7:1
Walton	$233,812	*12%*	$87,583	*34%*	2.7:1
Escambia	$159,933	*8%*	$59,909	*34%*	2.7:1
Franklin	$72,906	*4%*	$27,310	*34%*	2.7:1
Gulf	$56,227	*3%*	$21,062	*34%*	2.7:1
Santa Rosa	$37,003	*2%*	$13,861	*34%*	2.7:1

Dollars are in thousands USD. Estimates assume a 10% discount rate.

Alternative Funding Model #1

The most equitable funding model with respect to ROI is to distribute costs (investment) by the percentage of local fiscal impacts each region is projected receive over the 7-year life span of the network. Table 15 presents this model and provides the internal rate of return (IRR) and ROI for each region.[20] As can be seen, because this model uses the distribution of local fiscal impacts (which is the same variable it uses as the return), each region receives identical IRRs and ROIs. While the IRR and ROIs are equal, the investments for each region vary.

[20] The internal rate of return represents the annualized rate of return of a given investment over time.

Table 16. Alternative 2: Strait line Distribution of Economic Impacts
7-year Return on Investment

Region	Economic Impact	Distribution of Economics Impacts	Net Return (Local Fiscal Impact Less Investment)	Investment	Internal Rate of Return	Return on Investment
8-County Region	$55,733,716	100%	$1,901,674	$712,347	34%	2.7:1
Bay	$18,738,648	*34%*	$582,756	$239,503	*32%*	*2.4:1*
Okaloosa	$11,845,474	*21%*	$279,985	$151,400	*26%*	*1.8:1*
Baldwin	$10,764,308	*19%*	$453,190	$137,581	*39%*	*3.3:1*
Walton	$5,667,778	*10%*	$248,954	$72,441	*40%*	*3.4:1*
Escambia	$5,491,234	*10%*	$149,657	$70,185	*29%*	*2.1:1*
Franklin	$1,478,069	*3%*	$81,324	$18,892	*47%*	*4.3:1*
Santa Rosa	$929,245	*2%*	$38,987	$11,877	*39%*	*3.3:1*
Gulf	$818,960	*1%*	$66,822	$10,467	*61%*	*6.4:1*

Alternative Funding Model #2

The second alternative funding model uses the projected economic (value added) impacts presented in Table 8 as the distribution method. This distribution method was chosen as it captures broader impacts to each region's economy rather than focusing solely on the returns to government. Table 16 presents the IRR and ROI for each region in the model. Here, investment by each region is modified based on the economic impact distribution, and because the model still uses local fiscal impacts at the return variable in its calculations, there is considerable variability in IRRs and ROIs across each region. While the ROI for 8-county region remains at 2.7:1 (as it will for each model) returns for Bay, Okaloosa, and Escambia counties all fall below the region's ROI, while the remaining counties are projected to experience ROIs greater than the region. This is entirely due to the redistribution of investments across each region.

Table 17. Alternative 3: Tiered Structure Based on Fiscal Impacts
Natural (Jenks) Breaks Statistical Groupings
7-year Return on Investment

Region	Net Return (Local Fiscal Impact Less Investment)	Tier	Investment	Internal Rate of Return	Return on Investment
8-County Region	$1,901,674	-	$712,347	34%	2.7:1
Bay	$629,727	Tier 1 - 27%	$192,533	39%	3.3:1
Baldwin	$398,238	Tier 1 - 27%	$192,533	28%	2.1:1
Okaloosa	$328,815	Tier 2 - 14%	$102,570	39%	3.2:1
Walton	$218,825	Tier 2 - 14%	$102,540	29%	2.1:1
Escambia	$189,306	Tier 3 - 4%	$30,535	60%	6.2:1
Franklin	$69,680	Tier 3 - 4%	$30,535	30%	2.3:1
Gulf	$46,754	Tier 3 - 4%	$30,535	23%	1.5:1
Santa Rosa	$20,329	Tier 3 - 4%	$30,535	11%	0.7:1

Alternative Funding Model #3

Rather than utilizing simple straight line distributions to determine investment, the final two models employ the use of a statistical technique called the Jenks Natural Breaks Optimization method. This method uses an algorithm to group values based on natural groupings inherent in the data. By doing so, the model creates a three (3) tiered structure of investment based on these natural groupings. However, as with the first two models, in order optimize each tier, we must chose a metric from which to group. The model presented in Table 17 uses the local fiscal impact as the grouping metric. After groupings are established, Tiered levels of investment are created based on each group's aggregate fiscal impact distribution. For instance, the first tier contains Bay and Baldwin counties which are projected to receive a combined 54% of the 8-county region's local fiscal impacts. As such, each region in Tier 1 is assigned an investment percentage of 27% (54%/2).

Because each region has significant differences in fiscal impacts due to their local taxing structures, the distribution of IRR and ROI across regions is severely distorted. This is the case particular with Tier 3 where Escambia County is projected to receive an ROI of 6.2:1 and Santa Rosa County receiving a 0.7:1.

Table 18. Alternative 4: Tiered Structure Based on Economic Impacts
Natural (Jenks) Breaks Statistical Groupings
7-year Return on Investment

Region	Economic Impact	Tier	Net Return (Local Fiscal Impact Less Investment)	Investment	Internal Rate of Return	Return on Investment
8-County Region	$55,733,716	-	$1,901,674	$712,347	34%	2.7:1
Bay	$18,738,648	Tier 1 - 25%	$646,629	$176,162	42%	3.7:1
Okaloosa	$11,845,474	Tier 1 - 25%	$255,754	$176,162	22%	1.4:1
Baldwin	$10,764,308	Tier 2 - 25%	$415,141	$176,162	31%	2.4:1
Walton	$5,667,778	Tier 2 - 10%	$250,162	$71,313	41%	3.5:1
Escambia	$5,491,234	Tier 2 - 10%	$148,608	$71,313	28%	2.1:1
Franklin	$1,478,069	Tier 3 - 2%	$86,548	$13,745	60%	6.3:1
Santa Rosa	$929,245	Tier 3 - 2%	$37,197	$13,745	34%	2.7:1
Gulf	$818,960	Tier 3 - 2%	$63,622	$13,745	49%	4.6:1

Alternative Funding Model #4

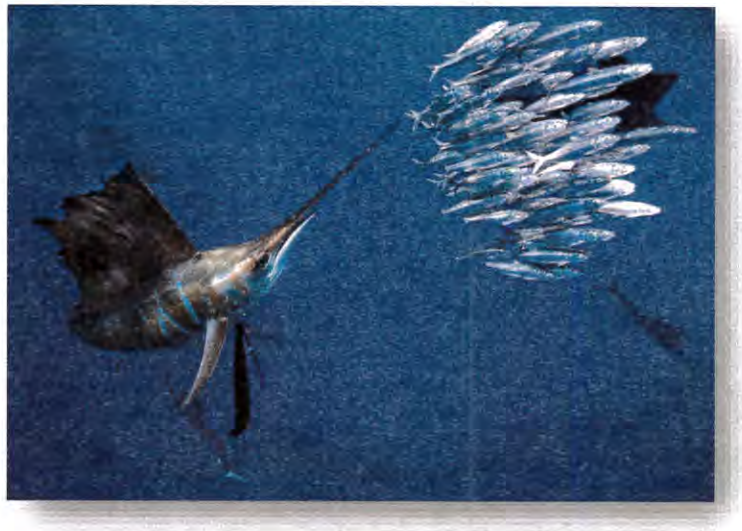
Due to the instability of using local fiscal impacts at the metric from which to form groups, the final model uses economic impacts as the grouping metric. By applying the Jenks Natural Break Optimization method to the economic (value added) impact estimates for each region, the model presented in Table 19 provides a more equable distribution of IRR and ROI across each region. While regions such at Okaloosa, Baldwin, and Escambia counties are projected to have less IRR and ROI than the 8-county region, all regions are projected to have positive returns over the 7-year period.

Funding Model Considerations

Based on the each of the four models presented above, we recommend the Council and its partners consider basing their funding discussions on Models 1 or 4. Each provides a different perspective from which stakeholders can view their investment decision. Model 1 provides investment allocations based on the equal returns (IRR and ROI) each region is projected to receive (each region has different investment levels, but returns are expected to be similar). Model 4 takes the inverse position. With a tiered structure, investment levels are similar across statistically optimized groups, but returns can differ substantially across regions. However, all regions are projected to have positive returns.

Funding Opportunities

A number of funding options are available to the Council and its partners. From grants dollars to Tourist Development (Bed) Taxes to industry contributions, the region has ample opportunity to fund the proposed FAD network. Our team spoke with industry practitioners and state regulators to better understand these options and how the region might best leverage the millions of dollars in BP oil spill monies flowing into the region over the next several years.



Tourist Development Taxes (State of Florida)

The counties associated with this study have additional funding resources available by utilizing Tourist Development Tax (TDT) revenue. These are local option transient rental taxes on rentals or leases of accommodations which include properties such as hotels, motels, apartments, condominiums, etc. for a term of six months or less. These tax rates vary from 3% to 6% and their approved uses vary according to the particular levy. General uses include capital construction of tourist-related facilities, tourist promotion, and beach and shoreline maintenance. In addition, counties with a population of less than 750,000 may take advantage of the additional purposes authorized in section 125.0104(5)(b), Florida Statutes, which include the repair, improvement, or maintenance of a zoological park or nature center.

Collected TDT revenues can be used as tourist promotion to construct artificial reefs systems. A FAD network could be justified under this same approved use. The Florida Attorney General has issued an Advisory Legal Opinions supportive of TDT revenues for artificial reefs and public recreational trails.[21] Relying on a general definition of the term "nature center" and the use of that term along with a fishing pier could provide additional justification for TDT revenues used for FADs.

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v[21] Attorney General Opinion 97-48
http://www.myfloridalegal.com/ago.nsf/Opinions/4A721E23A89FFA4C852564E300674A91
Attorney General Opinion 94-12
http://myfloridalegal.com/__85256236006EB5E1.nsf/0/0780BE8D233BC68D8525621F004C68D7?Open&Highlight=0,attorney,general,opinion,94-12

Counties have exercised the use of TDT revenue for artificial reefs and programs. Okaloosa County's tourist development plan includes a determination that "constructing artificial reefs will promote tourism by offering diving, snorkeling and fishing activities."[22] Brevard County has $2.6 million from county tourist taxes to build artificial reefs. Citrus County submitted the inquiry that resulted in the State Attorney General's support for these uses in 1997

Deepwater Horizon Oil spill Grants

RESTORE Grants

In April of 2010, the Deepwater Horizon oil spill discharged millions of barrels of oil into the Gulf of Mexico. Two years later, the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act (RESTORE Act) was signed into law making 80% of the Clean Water Act penalties available to the Gulf Coast region. Through the Gulf Coast Restoration Trust Fund established in the U.S. Department of the Treasury (Treasury) there are five funding components making funds available to Florida and Alabama in accordance with certain legal parameters. Two of the components that could be leverage for the proposed FAD network are:

- Direct Component
- Oil Spill Impact Component

These funds are specifically designated for the states' and counties' use. However, the activities and projects funded do not have to be specifically located within either. The RESTORE Act allows funding for projects within the Gulf Coast Region as defined in 31 CFR Part 34. This definition includes "All Federal waters in the Gulf of Mexico".[23] As the proposed network is squarely in federal waters, it would qualify for RESTORE funds.

Direct Component. The FAD network does meet the criteria of the Direct Component eligible activities for:

- Workforce development and job creation
- Promotion of tourism in the Gulf Coast Region, including promotion of recreational fishing;

[22] Sec. 20-72. - Tourist development plan
https://library.municode.com/fl/okaloosa_county/codes/code_of_ordinances?nodeId=COOR_CH20TA_ARTIITODE_S20-72TODEPL
[23] https://www.treasury.gov/services/restore-act/Documents/RESTORE%20Act%20Interim%20Final%20Rule.Federal%20Register2014-19324.pdf

As demonstrated in the economic analysis section, the Network is estimate to create 368 jobs and nearly $56 million in economic impact (value added) impact over the 7-year period. Moreover, the Network provides an excellent opportunity to enhance recreational fishing across the region by expanding sport fishing opportunities to anglers and charter fishing fleets east of the Gulf of Mexico oil platforms – particularly those counties that are more than a day's ride to the platforms.

For context, we have provided a few comparable projects that have been approved by the Department of Treasury

Accepted by Department of Treasury in a Multiyear Plan

Restoring Bay County's Recreational Fishing Industry through Reef Construction / Promotion

- Eligible Activity: Promotion of tourism in the Gulf Coast Region, including recreational fishing
- Construct a series of artificial reefs to provide additional opportunity for recreational fishing, diving and other tourism businesses

Hernando Beach Shallow Water Reef Project

- Eligible Activity: Mitigation of damage to fish, wild life, and natural resources.
- The project entails the creation of several artificial reef habitats along the Coast of Hernando County providing protection for dwindling fish species so they have safe havens to live and spawn.

Monroe County Coral Reef Restoration for Environmental and Economic Enhancement of the Florida Keys

- Eligible Activity: Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast Region
- Grow staghorn coral in undersea nurseries located throughout the Florida Keys and boulder coral in land-based nurseries to restore degraded reefs in the Florida Keys through the out-planting of nursery-reared corals.

Oil Spill Impact Component. This component of the RESTORE Act will distribute $294 million across 23 Florida Counties affected by the Deepwater Horizon spill. The Gulf Consortium was formed to meet requirements of the RESTORE Act and develop a State Expenditure Plan (SEP) to distribute the Spill Impact funds. The Consortium's consultant team is currently evaluating and refining project submissions. The SEP is scheduled to be drafted this fall and approved by spring, 2018. The Okaloosa County Commission has nominated $500,000 of their Spill Impact funds by submitting *Fish Aggregating Device Network (FADS)* for inclusion in the Consortium's SEP.

Triumph Gulf Coast. Triumph Gulf Coast, Inc. (Triumph) is the non-profit established by Florida legislation to distribute $1.5 billion in economic damages from Deepwater Horizon oil spill. These funds are specifically intended for the economic recovery, diversification, and enhancement of the eight Northwest Florida counties disproportionally affected by the spill. Triumph has been operating in an unofficial capacity for nearly two years, preparing for its official designation, and planning for the initial deposit of $300 million in funds. Now the organization is officially established and ready to begin operations.

Following the initial $300 million deposit, an additional $100 million per year will become available over the next 12 years. While no formal criteria and application process has been established, Triumph has been working with professional economic development organizations, such as Enterprise Florida and Florida's Great Northwest, to explore various template forms and processes. Specifically two issues discussed include sustainability of a project beyond being funded by Triumph Gulf Coast and maximizing the use of the funds for investment in the region.

Sport Fish Restoration Funds

Per the Dingell-Johnson Restoration Act (DJ) of 1950 the federal government provides grant monies to, among other conservation efforts, enhance sport fishing opportunities for recreational boaters. Known as Sport Fish Restoration Funds, these grants are funded by federal excise taxes on fishing equipment, motorboat and small engine fuels, and import duties. The US Fish & Wildlife Service oversee these dollars and provide states with annual allocations to fund qualified projects. Table 19 provides the apportionment for Florida and Alabama. Combined, these states have access to over $18 million in funds.

Table 19. Sport Fish Restoration Funds – 2017 Apportionment

State	2016 Returned Funds	2017 Apportionment	2017 Total
Florida	$812,942	$11,248,808	$12,061,750
Alabama	$434,312	$5,681,961	$6,116,273

Based on conservations with Alabama and Florida state regulators, in order to qualify for funding, the FAD network would need to provide opportunities for both charter fishing and private recreational anglers. Given the proposed Network is between 60 and 80 NM offshore, there were concerns that its location could either alienate private recreational anglers or incentivize them to venture further offshore than they typically would travel thus putting less experienced anglers in harm's way.

There is precedent in Sport Fish Restoration Funds fully funding FAD networks. The USVI, Guam, and Puerto Rico FAD networks were all funded by these monies. While these networks are closer to shore than the proposed FAD network, regional Charter Fishing Fleets contribute significantly to the excise taxes funding the Sports Fish Restoration Fund. The regional fleet is estimated to spend nearly $12 million in motor boat fuel alone annually.

Private Sector Contributions

There are ample opportunities for private sector contributions. Speaking with Charter Boat Captains and tournament organizers in the region, the general consensus toward contributions was positive – although not without some mild concerns. For most Captains, any type of regulated system that provided consistent sport fishing opportunities east of the Louisiana oil platforms is welcomed. The proposed FAD network would open sport fishing markets in the northeastern Gulf of Mexico, providing opportunities for the expansion of bill fishing tournaments and increased daily offshore excursions. Possible funding mechanisms include selling tournament tags for catch and release, corporate sponsorships during tournaments, and charter fishing associations contributing boat time and man-hours to deployment and annual maintenance requirements.

Research Opportunities

While our team was unable to speak with academic researchers regarding research opportunities, precedent has been set with a similar FAD networks in Puerto Rico. As mentioned earlier, the nonprofit group Beyond Our Shores is working closely with PRDNR in conducting research using the FAD network.[24] The group partners with recreational anglers to collect data on migration patterns, catch rates, and usage. These buoys are rigged with time lapse cameras, hydra phones, and acoustic tags as data collection devises. While we are unsure as to the financial funding provided by the organization, it is more than likely the case that because the PR FAD network is fully funding by Sport Fish Restoration funds, that very little, if any, funding is directly contributed by Beyond Our Shores.

However, as nearly 32% of Sport Fish Restoration Funds are spent on fisheries research, the proposed FAD network described in this study could provide a platform for the region to begin similar research efforts as those in Puerto Rico. Whether the region partners with nonprofits such as Beyond Our Shores or academic institutions with active marine studies research programs (University of Miami and Nova Southeastern were two institutions that came up in discussions), an opportunity exists to leverage the Network's research capability for successful grant funding (RESTORE, Triumph, Sport Fishing Restoration Funds, etc.).

[24] A brief video depicting the PR FAD research program can be viewed at online: https://prfadsystem.com/2017/07/17/collaborative-fad-research-program/

Conclusion

The proposed FAD network can provide the region with enhanced sport fishing and other recreational fishing opportunities. The network is estimated to support 368 jobs and generate nearly $56 million in economic (value added) impact over a 7-year period. Moreover, all things remaining equal, the region stands to gain $2.6 million in additional government revenues over the same period. While the network is estimated to cost over $700,000 during the initial 7-year "Pilot Program", it is estimated the region will experience a 2.7:1 ROI – or nearly $1.9 million in net return.

Although we have proposed a funding model (see Table 19), with ample opportunities for grant funding in the coming years, we recommend the region enter into partnership with Tourist Development Departments / Convention & Visitor Bureaus, charter fishing associations, offshore fishing tournament organizers, private recreational anglers, research institutions, state regulators, and other relevant stakeholders to help fund, promote, and maintain the proposed Northern Gulf of Mexico Fish Aggregating Device Network. An FAD specific partnership could provide value to the region by developing and maintaining relationships amongst stakeholders which has proven crucial for effective communications. Moreover, the partnership can help strengthen grant applications by demonstrating to funding agencies the ongoing regional support for the project and to ensure the grant invested will lead to sustainable economic benefits.

Appendices

Appendix 1. Operational Expenditures of the Destin Charter Fishing Fleet, 2014

Items	Total	Distribution
Wages	$5,167,757	30.7%
Fuel	$3,989,069	23.7%
Maintenance/Repairs	$1,514,438	9.0%
Capital Depreciation	$1,339,896	8.0%
Boat Slip/Docking Fees	$1,079,155	6.4%
Bait/Tackle/Fishing Equipment	$936,034	5.6%
Advertising	$758,573	4.5%
Insurance	$622,320	3.7%
Cell Phone/Telephone	$323,779	1.9%
Vehicles	$306,302	1.8%
Tournaments	$259,709	1.5%
Ice	$137,794	0.8%
Inspection Fees/Licenses/Permits	$134,952	0.8%
Food/Beverages	$128,040	0.8%
Association Fees	$57,427	0.3%
Uniforms	$42,955	0.3%
Boat Registration & Tag	$36,552	0.2%
Operational	$11,666,995	69.3%
Payroll	$5,167,757	30.7%
Total	**$16,834,752**	**100.0%**

Source: *Economic Impact Analysis of Charter Fishing and Recreational Boating along the Destin Harbor*, Haas Center 2014

Appendix 2. Total Economic Impacts by Region
Baseline Estimates Associated with Charter Fishing Industry
(Dollar values are in millions USD)

Regional Impacts

Impact Type	Employment	Labor Income ($)	Value Added ($)	Output ($)
Direct Effect	4,833	$154.22	$213.60	$374.79
Indirect Effect	977	$32.33	$58.01	$108.46
Induced Effect	1,315	$35.86	$70.01	$122.45
Total Effect	6,811	$222.41	$341.62	$605.70

Baldwin County

Impact Type	Employment	Labor Income ($)	Value Added ($)	Output ($)
Direct Effect	1,310	$38.35	$53.75	$91.55
Indirect Effect	186	$6.29	$11.80	$21.22
Induced Effect	227	$7.64	$15.14	$25.28
Total	1,723	$52.29	$80.69	$138.05
% of Region	25.29%	23.51%	23.62%	22.79%

Bay County

Impact Type	Employment	Labor Income ($)	Value Added ($)	Output ($)
Direct Effect	1,657	$54.52	$75.46	$130.02
Indirect Effect	312	$12.45	$22.80	$42.28
Induced Effect	431	$15.70	$30.49	$53.72
Total	2,400	$82.67	$128.75	$226.03
% of Region	35.24%	37.17%	37.69%	37.32%

Escambia County

Impact Type	Employment	Labor Income ($)	Value Added ($)	Output ($)
Direct Effect	273	$8.35	$11.57	$20.59
Indirect Effect	47	$1.98	$3.34	$6.18
Induced Effect	58	$2.24	$4.04	$7.08
Total	379	$12.58	$18.95	$33.85
% of Region	5.56%	5.65%	5.55%	5.59%

Franklin County

Impact Type	Employment	Labor Income ($)	Value Added ($)	Output ($)
Direct Effect	57	$1.74	$2.34	$4.36
Indirect Effect	14	$0.29	$0.54	$1.42
Induced Effect	9	$0.23	$0.54	$1.03
Total	80	$2.26	$3.41	$6.81
% of Region	1.17%	1.02%	1.00%	1.12%

Gulf County

Impact Type	Employment	Labor Income ($)	Value Added ($)	Output ($)
Direct Effect	44	$0.85	$1.16	$2.92
Indirect Effect	11	$0.23	$0.41	$1.13
Induced Effect	6	$0.15	$0.35	$0.67
Total	62	$1.23	$1.93	$4.71
% of Region	0.90%	0.55%	0.57%	0.78%

Okaloosa County

Impact Type	Employment	Labor Income ($)	Value Added ($)	Output ($)
Direct Effect	1,156	$37.08	$50.95	$93.42
Indirect Effect	234	$9.18	$15.57	$29.53
Induced Effect	218	$7.64	$14.76	$26.39
Total	1,608	$53.90	$81.28	$149.33
% of Region	23.60%	24.24%	23.79%	24.65%

Santa Rosa County

Impact Type	Employment	Labor Income ($)	Value Added ($)	Output ($)
Direct Effect	134	$3.52	$5.03	$9.02
Indirect Effect	15	$0.42	$0.70	$1.42
Induced Effect	16	$0.47	$1.01	$1.80
Total	165	$4.41	$6.73	$12.25
% of Region	2.42%	1.98%	1.97%	2.02%

Walton County

Impact Type	Employment	Labor Income ($)	Value Added ($)	Output ($)
Direct Effect	304	$9.80	$13.34	$22.91
Indirect Effect	41	$1.48	$2.85	$5.29
Induced Effect	50	$1.79	$3.68	$6.48
Total	396	$13.07	$19.87	$34.67
% of Region	5.81%	5.87%	5.82%	5.72%

Appendix 3. Tiered Impact Scenarios
5%, 10%, and 15% Increase from Direct Baseline Expenditures
(Dollar values are in Millions USD)

5% Increase in Economic Activity (Post-FAD Network)

Region	Jobs Supported	Labor Income	Economic Impact	Total Fiscal Impact	Local Fiscal Impact
8-County Region	318	$10.30	$15.57	$1.75	$0.71
Bay	*114*	*$3.92*	*$6.00*	*$0.63*	*$0.26*
Okaloosa	*76*	*$2.56*	*$3.79*	*$0.37*	*$0.14*
Baldwin	*78*	*$2.25*	*$3.45*	*$0.49*	*$0.19*
Walton	*19*	*$0.61*	*$0.91*	*$0.10*	*$0.05*
Escambia	*18*	*$0.60*	*$0.88*	*$0.09*	*$0.04*
Santa Rosa	*7*	*$0.20*	*$0.30*	*$0.04*	*$0.02*
Franklin	*4*	*$0.11*	*$0.16*	*$0.02*	*$0.01*
Gulf	*3*	*$0.06*	*$0.09*	*$0.01*	*$0.01*

10% Increase in Economic Activity (Post-FAD Network)

Region	Jobs Supported	Labor Income	Economic Impact	Total Fiscal Impact	Local Fiscal Impact
8-County Region	633	$20.50	$31.00	$3.46	$1.42
Bay	*228*	*$7.83*	*$12.00*	*$1.26*	*$0.53*
Okaloosa	*152*	*$5.13*	*$7.59*	*$0.73*	*$0.28*
Baldwin	*152*	*$4.40*	*$6.75*	*$0.95*	*$0.37*
Walton	*37*	*$1.22*	*$1.82*	*$0.20*	*$0.10*
Escambia	*35*	*$1.19*	*$1.76*	*$0.18*	*$0.07*
Santa Rosa	*15*	*$0.41*	*$0.60*	*$0.08*	*$0.03*
Franklin	*7*	*$0.21*	*$0.32*	*$0.03*	*$0.02*
Gulf	*6*	*$0.11*	*$0.17*	*$0.03*	*$0.02*

15% Increase in Economic Activity (Post-FAD Network)

Region	Jobs Supported	Labor Income	Economic Impact	Total Fiscal Impact	Local Fiscal Impact
8-County Region	949	$30.75	$46.49	$5.19	$2.12
Bay	342	$11.75	$18.00	$1.89	$0.79
Okaloosa	228	$7.69	$11.38	$1.10	$0.41
Baldwin	228	$6.59	$10.12	$1.43	$0.55
Walton	56	$1.83	$2.72	$0.30	$0.15
Escambia	53	$1.79	$2.64	$0.27	$0.11
Santa Rosa	22	$0.61	$0.89	$0.11	$0.05
Franklin	11	$0.32	$0.47	$0.05	$0.03
Gulf	9	$0.17	$0.26	$0.04	$0.02

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OKALOOSA COUNTY

Offshore Fish Aggregating Devices (FADs)

PROJECT NO. 3-2

Project Description

OVERVIEW AND LOCATION

This project involves the deployment of six to eight floating fish aggregating devices (FADs) from 30 to 90 miles offshore to attract pelagic fish species and provide enhanced recreational and commercial charter fishing opportunities. **Figure 3-2A** shows the general location of the proposed FADs off the coast of Okaloosa County.

Figure 3-2A. General location of proposed FADs off the coast of Okaloosa County.

NEED AND JUSTIFICATION

Offshore fishermen have historically benefitted from active and decommissioned National Oceanic and Atmospheric Administration (NOAA) weather buoys in the Gulf of Mexico that act as FADs to attract and concentrate pelagic fish, such as tuna, dolphinfish, and billfish. These structures make fish catch more efficient for both recreational and commercial charter fishermen. There is a strong interest among recreational and commercial charter boat fishermen in Okaloosa County in deploying and maintaining a network of FADs in offshore waters to meet the increasing demand for enhanced pelagic fishing opportunities and to increase fishing-based tourism, which is a major component of the local economy.

From an ecological standpoint, hard substrate and vertical structure are limited habitats in the Gulf of Mexico (Fikes, 2013), and the FAD structures, like artificial reefs, provide: (1) hard substrate to support encrusting and colonial organisms; (2) niche space for small marine invertebrates; and (3) shelter for larval and juvenile fishes. The project is justified by the demonstrated economic benefits of saltwater fishing in coastal communities.

PURPOSE AND OBJECTIVES

The purpose of the proposed project is to construct and deploy FADs in offshore waters of Okaloosa County. Project objectives include: (1) increase the concentration of pelagic fish at known locations in offshore waters; (2) increase recreational and commercial charter fishing opportunities; and (3) enhance fishing-based tourism in Okaloosa and surrounding counties.

PROJECT COMPONENTS

The FADs will be deployed and anchored at six to eight locations approximately 30 to 90 miles in offshore waters, at depths of 200 to 1,000 feet. The total number of FADs to be deployed will be dictated by the available funds. The design of the FAD units will follow guidelines developed by the NOAA. **Figure 3-2B** and **Figure 3-2C** show photographs of FADs, both above and below the water line, respectively.

Project components include planning, site selection, deployment, maintenance, and monitoring. The coordinates of the FADs will be published, and will be available for public use for recreational and commercial charter fishing.

Figure 3-2B. Above-waterline photograph of a typical FAD.

Figure 3-2C. Below-waterline photograph of a typical FAD.

Contributions to the Overall Economic and Ecological Recovery of the Gulf

Okaloosa County is the second-most popular drive-to destination in Florida and relies on beach- and fishing-based tourism. The proposed project will support recreational fishing, commercial fishing charters and headboats, and commercial fisheries. This project will support the increasing demand for offshore fishing opportunities by both residents and tourists by attracting and concentrating fish such as tuna, dolphinfish, and billfish at known locations in Okaloosa County's offshore waters. Similar to artificial reefs, FADs also support encrusting and colonial organisms, such as sponges and corals, and provide shelter for larval and juvenile fishes.

Eligibility and Statutory Requirements

This project is consistent with and addresses the following RESTORE Act eligible activity:

- Eligible Activity 10: Promotion of tourism in the Gulf Coast region, including recreational fishing (primary)

Comprehensive Plan Goals and Objectives

This project is consistent with, and addresses, the following Comprehensive Plan Goals:

- Goal 5: Restore and Revitalize the Gulf Economy (primary)
- Goal 3: Replenish and Protect Living Coastal and Marine Resources

This project is consistent with, and addresses, the following Comprehensive Plan Objectives:

- Objective 8 (Consortium Objective): Restore, Diversify, and Revitalize the Gulf Economy with Economic and Environmental Restoration Projects (primary)
- Objective 3: Protect and Restore Living Coastal and Marine Resources

Implementing Entities

Okaloosa County will be the sole implementing entity and grant sub-recipient responsible for the design, permitting, construction, and success monitoring of the program. The Tourist Development Councils from Gulf County to Escambia County have helped to fund an economic impact study for the project.

Best Available Science and Feasibility Assessment

The economic benefits to Florida's coastal communities from fishing are undeniable. Of the entire United States, the economic benefits of saltwater recreational fishing were greatest in west Florida ($4.9 billion, 47,000 jobs), followed by east Florida ($3.3 billion, 29,000 jobs) (NOAA 2011). The economic benefits of FADs include increased sport fishing trips, reduced fuel consumption, commercial and cottage industry development, and potential reductions in pressure on natural reef resources (Sharp, 2011). FADs attract and concentrate fish for more efficient catching, either by line or seine, although the reasons are unknown (FAO, 2017). There is little research indicating direct impacts on pelagic fisheries as a result of FADs, although they can affect tuna movements due to their pervasiveness (Wang et al., 2014), increase impacts of bycatch of species, and result in entanglement/drowning of sea turtles and marine mammals if not properly maintained (NOAA 2017). The following resources provide relevant information on FADs.

- *FAO (Food and Agriculture Organization of the United Nations). 2005-2017. Fish Aggregating Device (FAD). Technology Fact Sheets. Text by J. Prado. In: FAO Fisheries and Aquaculture, Rome. http://www.fao.org/fishery/equipment/fad/en.*
- *NOAA. Accessed 24 August 2017. Fish Aggregating Devices (FADs): Fishing Gear and Risks to Protected Species. http://www.nmfs.noaa.gov/pr/interactions/gear/fads.htm.*
- *NOAA Fisheries. 2011. Fisheries Economics of the United States 2011.*
- *Sharp, M. 2011. Economic Benefits of Fish Aggregating Devices in the South Pacific. https://fads2011.sciencesconf.org/1307/document.*

- *Wang, X., Chen, Y., Truesdell, S., Xu, L., Cao, J., & Guan, W. (2014). The Large-Scale Deployment of Fish Aggregation Devices Alters Environmentally-Based Migratory Behavior of Skipjack Tuna in the Western Pacific Ocean. PLOS ONE, 9(5).*

This project is considered to be feasible with respect to the ability to: (1) obtain necessary permits; (2) construct the project within the proposed budget; and (3) effectively operate and maintain the project components over the long-term.

Risks and Uncertainties

No significant risks or uncertainties were identified during the evaluation of this project that would preclude project implementation. FADs will be designed to best available technology guidelines to limit damage from tropical storms as well as adverse impacts to marine species. Regular monitoring and maintenance along with public information on the proper use of the FADs will minimize any adverse impacts.

Success Criteria and Monitoring

The proposed project includes placement structures to support recreational and commercial demand for offshore fishing opportunities. Appropriate success criteria will be developed and described in the implementation grant request. It is anticipated that quantitative success criteria will be developed for:

- Number of FADs deployed
- Metrics on the recruitment of encrusting organisms and densities fish
- Increase in recreational use and fishing trips

In the project grant request, a detailed monitoring program will be described that addresses data collection and assessment methodologies for the above-listed criteria. Okaloosa County is committed to conducting the monitoring necessary to quantify project benefits.

Milestones and Schedule

The total estimated time horizon of this project is approximately 6 years. It is expected to start in 2018 and end in 2023. The project milestones and schedule are shown in the chart below.

MILESTONE	YEARS FROM SEP APPROVAL															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Feasibility study																
Preliminary design																
Final design and permitting																
Construction (buoys)																
Construction (deployment)																
Success monitoring																

Budget and Funding Sources

Okaloosa County has estimated the total cost of this project to be approximately $500,000, and is committed to allocating $500,000 of its share of the Florida Spill Impact Component to the project. Other county funds (Tourist Development Tax) will be used for continuing maintenance of the FAD network. A summary of the project budget and funding sources is provided in the table below.

MILESTONE	ESTIMATED TOTAL DOLLARS	ESTIMATED POT 3 ALLOCATION
Feasibility study	$25,000	$25,000
Preliminary design	$25,000	$25,000
Planning Subtotal	**$50,000**	**$50,000**
Final design and permitting	$25,000	$25,000
Construction	$275,000	$275,000
Implementation Subtotal	**$300,000**	**$300,000**
Monitoring	$150,000	$150,000
Total Cost	**$500,000**	**$500,000**
SECURED FUNDING SOURCES		
Spill Impact Component		$500,000
Direct Component		$0
Other grants or co-funding		$0
Other County funds – Tourist Development Tax		$80,000
Total Secured Funding		**$580,000**
Budget Shortfall		**$0**
POTENTIAL LEVERAGED FUNDING SOURCES		
Natural Resource Damage Assessment		
Triumph		
O.18 FishAmerica Foundation		
S.27 Nonpoint Source Management Program (NPSM) - Section 319		
S.34 TMDL Water Quality Restoration Grants		
S.49 Sport Fish Restoration Program		

Partnerships/Collaboration

Okaloosa County has established a regional partnership for the development of FAD networks with:

- Gulf County
- Bay County
- Walton County
- Santa Rosa County
- Escambia County
- Gulf Shores, Alabama

The Tourist Development Councils of these Counties have funded an economic impact study for the project. Other potential project partners include:

- University of West Florida
- University of Florida/Institute of Food and Agricultural Sciences
- Florida State University
- Florida Fish and Wildlife Conservation Commission
- The Nature Conservancy

Coordination with the following agencies is anticipated:

- Florida Department of Agriculture & Consumer Services
- Florida Fish and Wildlife Conservation Commission
- Florida Department of Environmental Protection
- Northwest Florida Water Management District
- National Marine Fisheries Service
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service