PROJECT TITLE:

Subsea Buoy Retrieval Systems Testing in the Box and King Crab Experimental Fishery

A. CONTACT INFORMATION

Provide contact information for key participants, including the applicant and, if applicable, the entity administrator and any authorized agent(s). If any key participant does not have a Get Outdoors ID (GO ID) or commercial fishing license (CFL) number, they must provide information for CDFW to create a new customer profile pursuant to subsection 91(c)(2)(A)(1), Title 14, CCR.

1. Applicant

Name	Kim Sawicki
Title and Affiliation	President, Sustainable Seas Technology, INC
Mailing Address	**[Mailing address omitted]**
Email Address	**[Email address omitted]**
Telephone Number	**[Phone number omitted]**
GOID or CFL Number	**[GOID/CFL number omitted]**

2. Entity Administrator

Name	
Title and Affiliation	
Mailing Address	
Email Address	
Telephone Number	
GOID or CFL Number	

3. Authorized Agents

Name	Gregory Olsen
Title and Affiliation	Captain F/V Fourth Watch
Mailing Address	**[Mailing address omitted]**
Email Address	**[Email address omitted]**
Telephone Number	**[Phone number omitted]**
GOID or CFL Number	**[GOID/CFL number omitted]**
Name	Dannial Major
Title and Affiliation	Captain F/V Island Lady G

Mailing Address	**[Mailing address omitted]**
Email Address	**[Email address omitted]**
Telephone Number	**[Phone number omitted]**
GOID or CFL Number	**[GOID/CFL number omitted]**

The applicant requests that up to ten Authorized Agents be permitted to participate in this EFP, if approved. Enrollment into the program would focus on fishers with extensive experience in trap/pot fishing and/or those in good standing with the Department. It is understood that the Department would conduct background checks on candidates and that recruitment would incur additional amendment fees at the time of an amendment request.

B. STATEMENT OF PURPOSE

1. **Describe the purpose and goals of the proposed project, including how the project meets or is consistent with the policies of Fish and Game Code (FGC) Section 7050.**

The purpose of this project is to build upon an existing Experimental Fishing Permit (EFP) program to fill critical data gaps in essential fishery information for brown box crab and California king crab and evaluate the potential for a commercial fishery for brown box crab and its design elements. An exploratory fishing program for box crab was originally approved by the California Fish and Game Commission in December 2018 and is currently set to expire on April 1, 2023. This was a collaborative research program involving the California Department of Fish and Wildlife (CDFW), California Sea Grant, and commercial fishers, among other partners and sponsors. Research included exploratory fishing, a tag-recapture study, and laboratory studies of life history. Based upon the information gained from the current EFP, brown box crab and California king crab seem to represent a viable new fishing opportunity in southern California: markets are growing, there is interest from the fishing community in increasing participation, and information gained through this research can be used to establish a small fishery with conservative management measures. However, sufficient information is not yet available to enable the California Department of Fish and Wildlife (CDFW) to make a final recommendation on whether a sustainable commercial fishery could be established, nor what management measures are needed and the supporting regulations to implement them. We propose an EFP for a small-scale box crab and king crab fishery to continue gathering critical information that will allow CDFW to complete its assessment of management strategies for this emerging fishery. This purpose is aligned with the guidance of the Marine Resources Committee of the California Fish and Game Commission given during the March 24, 2022 meeting to pursue the development of a new experimental fishing permit program for brown box crab.

Importantly, this project would also allow for testing the feasibility of using subsea buoy retrieval systems[1] in deep water. The results of the testing will ultimately serve to enable decision-making

[1] Subsea Buoy Retrieval Systems are also known as “ropeless”, “lineless”, “pop-up”, and “on- demand” fishing systems. For the purpose of the application, the all-inclusive term SBRS will be used for all devices, regardless of release type. (Galvanic, Timed, Acoustic).

regarding the authorization of alternative gear for use in California's box and king crab fisheries. Similar EFPs have been proposed in northern California for testing with the Dungeness crab fishery, but this project will expand our understanding of the utility of these alternative gear types across a range of habitats, depths, sea conditions, and fishing practices.

Consistent with Fish and Game Code (FGC) Section 7050, this project aims to ensure the conservation of ESA-listed marine species and allow for limited testing of a box and king crab fishery through effective collaborations and a science-based approach. Efforts included within this EFP promote scientific research to better inform fishery management decisions that recognize the importance of commercial fisheries while conserving the health and diversity of marine ecosystems.

The goals of this EFP include specific aspects related to Fishery/Biological Research as well as Alternative Gear Testing:

Fishery/Biological Research:

- Gather essential fishery information for brown box crab and California king crab to fill critical knowledge gaps related to habitat, abundance, growth, movement, and bycatch in southern California;
- Implement a limited test fishery for brown box crab and California king crab using information generated during the previous, exploratory fishing EFP that includes testing wildlife entanglement risk mitigation measures;
- Work with CDFW to support its continued evaluation of the feasibility of a commercial fishery for brown box crab and California king crab and its design elements.

Alternative Gear Testing:

Primary goals:

- Provide necessary information to establish the efficacy of use of subsea buoy retrieval system devices with respect to entanglement risk reduction, fisher safety, cost, and fishing performance in the context of the box crab fishery.
- Work with CDFW Law Enforcement Division (LED) staff to develop and refine alternative gear enforcement protocols including the subsea buoy retrieval systems, the rmwHub interoperable virtual gear marking system and enforcement dashboard configurations and refine the gear and methods accordingly.
- Work with future CDFW-approved participants to certify competency in available subsea buoy retrieval system technologies.

Secondary Goals

- Provide experience with the use of subsea buoy retrieval system gear to build confidence within the box and king crab fisheries for potential use in future whale entanglement mitigation strategies.
- Expand outreach opportunities with other fisheries to further the consideration of subsea buoy retrieval system gear and other whale entanglement mitigation strategies.

2. **Provide a list of proposed project activities that are prohibited under current state fishing laws or regulations (cite the specific section number(s), if known), and the reasons to justify authorization (exemption) of those activities under the EFP.**

   a) Applicant is requesting authorization to target Brown box crab and California king crab and land these species in excess of the 25 lb. limit per day (CCR Title 14 § 126 (b)(1)).

   b) Every trawl of traps will be marked with a buoy per FGC Section 9005, but applicant is requesting that subsea buoy retrieval system devices be allowed on all trawls (see section E.1), which would mean that the buoy would be submerged and therefore not visible at the surface until it is released.

   c) Applicant is also requesting that rock crab, spot prawn, groundfish, and lobster fishing also be allowed during experimental fishing trips in which subsea buoy retrieval system devices are used on box crab and king crab traps. This would require an exemption to the CCR Title 14 § 125 (b)(3) prohibiting the possession of these devices by any commercial rock crab trap permittee on any vessel while taking or attempting to take rock crab during mixed-fishery trips.

C. STATEMENT OF QUALIFICATIONS

1. **Lead and provide supervisory oversight for all activities of the permit under the authorizations, standard terms, and special conditions.**

Kim Sawicki (Sustainable Seas Technology) will lead the project and provide oversight of training and field-testing aspects related to subsea buoy retrieval system gear. Ms. Sawicki is a research associate and PhD student at the University of Massachusetts-Dartmouth School for Marine Science and Technology and the President of Sustainable Seas Technology, Inc. She has dual degrees in Pathobiology & Veterinary Science and Allied Health Sciences and is Fulbright-Schuman Alumnae for her independent research project in Scotland, the UK, and Ireland in this topic. In these capacities, she has conducted extensive field research on alternative fishing gear methods around the world for over five years and is currently overseeing research for a similar experimental fishing permit project in the South Atlantic black sea bass pot fishery. Her work with Sustainable Seas Technology focuses on empowering individuals, fishing communities, and conservationists to engage in productive and non-judgmental dialogue to help reduce fishing gear loss and cetacean mortalities through unintended sea surface interactions. She is a recognized global expert in these technologies and has volunteered extensively on the West Coast as an invited speaker for the Dungeness crab fishery, and as an outreach consultant for the National Marine Sanctuaries Foundation. She has also fished under an individual commercial license with the Dungeness crab fishery as paid crew, as well as for research purposes pertaining to this project and others.

All authorized agents recruited by the applicant will be experienced commercial fishers who are in good standing with CDFW (for additional information, see Section C2 below) and who are capable of following protocols to test alternative gear configurations. All applicants will be required to complete an initial 40-hour training certification with the various subsea buoy retrieval system gear types listed in section E.6.

CDFW Marine Region staff will provide all forms, logbooks, and instructions for the collection and submission of all biological and fishery-related data required by CDFW. SST will work with CDFW to coordinate the collection of biological samples and facilitate at-sea or dockside sampling by staff or professional observers as requested by CDFW. These data will be analyzed by CDFW. SST will be responsible for preparing and submitting the annual and final reports to CDFW.

2. **Experience in identification, methods, and protocols specific to the requested species listed under section E.2. of this document**

The applicant will seek to recruit fishers who have in-depth knowledge of how to fish for the species of interest and have demonstrated themselves to be collaborative participants in this or other experimental fisheries. In addition to experience specifically related to fishing for box and king crab, the applicant and future Authorized Agents will perform competency training to assure that all the participating experienced trap fishers are also capable of following protocols to test alternative gear configurations. The applicant trains fishers in an initial 40-hour training certification with the various subsea buoy retrieval system gear types listed in section E.6.

3. **Obtain all appropriate authorizations and oversee quality control measures to assure conformance to the specified standards or requirements (e.g., take appropriate measures to ensure, promote, and facilitate compliance).**

The applicant will hold her own permit and will therefore be responsible for obtaining all appropriate authorizations and meeting all requirements of the permit. The primary applicant and additionally recruited individuals may request a secondary operator, listed in an amendment request, as authorized agents, who would be allowed to fish under the permit without the primary permit-holder on board. Secondary operators would also be required to meet all requirements of the permit, including following all applicable protocols for communication, data collection, and fishing practices. The primary permit-holder will ultimately be responsible for ensuring the secondary operators' compliance and ensuring biological and fishery-related data collection protocols are being followed accurately and submitted to CDFW Marine Region in a timely manner. The primary permit holder will also be responsible for day-to-day oversight of quality control measures related to subsea buoy retrieval system gear testing.

4. **Train all persons operating under the permit.**

All future authorized agents will be trained in data collection and alternative gear operation protocols. The permit holder will be responsible for ensuring that anyone conducting or assisting with fishing operations is able to perform these responsibilities as needed.

CDFW Marine Region staff will provide initial training on biological and fishery data collection protocols to the primary permit holder. Additional participants recruited into the program will also receive training from CDFW staff as well as any secondary operators.

The applicant will be responsible for the initial training of all future Authorized Agents operating subsea buoy retrieval system gear under the permit. Subsequently, once fishers have demonstrated proficiency with the gear, they will also be certified through SST to assist in training additional participants.

5. Coordinate field activities and communicate field findings with CDFW marine region.

Kim Sawicki of Sustainable Seas Technology, INC will be responsible for coordinating field activities and communicating field findings to CDFW Marine Region. She has worked with CDFW over the past two years in the development and testing of the gears and the needs of CDFW. The permit-holder will submit annual and final reports as required by the EFP program. Each future authorized agent will be responsible for coordinating their own fishing operations. In addition to providing information about the fishery and alternative gear types by following data collection and gear-testing protocols, authorized agents will share any observations made during this EFP via informal conversations with Department staff, and in meetings or workshops.

6. Collect, analyze, and transmit biological data gathered under the EFP to CDFW marine region.

Kim Sawicki of Sustainable Seas Technology, INC (SST) will be responsible for the collection, analysis, and transmission of data gathered by the participants under the EFP to CDFW Marine Region. Sawicki has extensive experience with the collection, analysis and communication of data related to subsea buoy retrieval system fishing gear including testing programs in the Dungeness Crab, Spiny Lobster, American Lobster, European Lobster, black sea bass, and Brown and Velvet Crab fisheries (UK). Sawicki will assimilate information regarding subsea buoy retrieval system gear, transmit data summaries, and share her findings with CDFW. CDFW Marine Region and LED staff will also have access to data collected via gear marking and electronic monitoring systems to enable required enforcement activities. Applicant and any Authorized Agents will submit all required data related to fishing and biology, such as electronic monitoring records, logbooks, and other data collection forms, to CDFW Marine Region in a timely manner after each fishing trip.

D. PERMIT APPLICATION TYPE

1. Select desired permit tier.

☐ Tier 1 (For purposes other than exploratory fishing)
☐ Tier 2 (For purposes other than exploratory fishing with assistance from CDFW)
☐ Tier 3 (For the purpose of exploratory fishing)
☒ Tier 4 (For the purpose of exploratory fishing with assistance from CDFW)

2. Request permit fee reduction option consideration.

☒ Yes ☐ No

A permit fee reduction is requested due to the Department's strong interest in the development and testing of alternative gear types designed to reduce the risk of wildlife entanglement in fixed-gear fisheries. In addition, the applicants are willing to mark surface buoys and lines as needed by the Department to help inform a future line-marking program in California.

3. **Has pre-application consultation with CDFW taken place with respect to this proposal? (Required for a Tier 2 EFP, Tier 4 EFP, or permit fee reduction option)**

☒ Yes ☐ No

If yes, attach a copy of the pre-application consultation summary letter or provide the name and contact information of CDFW staff with whom the applicant consulted:

Consultation between the applicants, Kim Sawicki, and CDFW Marine Region staff, including Lindsay Orsini (lindsay.orsini@wildlife.ca.gov),
Steven Rienecke (steven.rienecke@wildlife.ca.gov), and
Tom Mason (tom.mason@wildlife.ca.gov) took place during several virtual meetings in 2022/23.

E. PROJECT DESCRIPTION

Describe the proposal and any other relevant details, including:

1. **A description of the experimental design and research plan, including specific procedures for data collection, storage, processing, and analysis; and a timeline for implementing the project, including, if applicable, when compensation fishing is expected to occur.**

Through fishing for brown box crab and California king crab, we aim to collect and share information about these species and fishery and test alternative gear types in a limited-testing approach.

Fishery/Biology: We seek to fish for brown box crab and California king crab and gather essential fishery information for these species. The experimental design would involve using SBRS gear with traps to fish for box and king crab to sell while collecting data and samples and supporting the continuation of an existing tag-recapture study. We would begin fishing and providing the following information/samples to CDFW as soon as possible after a permit is granted:

- ***Logbooks***: Logs will be completed for each day of box/king crab fishing to document fishing effort, gear configurations, depths, and catch.
- ***Sample Trap forms***: Detailed information about the composition, quantities, sexes, reproductive status, and sizes/weights of target species and bycatch will be collected as requested by CDFW, following protocols already developed in the current experimental fishery or adapting as needed.
- ***Tag-recapture study***: A tag-recapture study is underway to measure the growth, movement, and abundance of box crab. Detailed information about tagged crab will be recorded when recaptured, including size, sex, shell condition, and reproductive status. Department staff are encouraged to join fishing trips to continue tagging crab.
- ***Electronic monitoring***: Electronic monitoring systems will be used as requested by CDFW to provide information on fishing behavior and crab habitat.
- ***Biological sampling***: Samples of box and king crab will be provided to CDFW or researchers

as requested to further understanding of the biology and ecology of these species. Samples will be kept alive in fish holds and delivered at the dock.

Fishery- and biology-related data will be provided to CDFW in a timely manner after each fishing trip. CDFW Marine Region staff will be responsible for processing, storing, and analyzing these data. We will use a phased approach to testing subsea buoy retrieval system gear, detailed below.

Phase 1 – Dockside/Inshore configuration trials and testing

During Phase 1, Kim Sawicki will conduct a series of trial fishing trips to perfect gear configurations with manufacturers. During these activities, the gear will be tended 100% of the time, and may require the use of a "tag" line or "safety" line to ensure gear configurations are easy to retrieve should a component of the configuration fail. This is the only time when a "tag" line is envisioned to be needed. These trial configurations are based on feedback solicited directly from past participants in the Box Crab EFP as well as experienced pot fishers in California. A week-long workshop just prior to this application was instrumental in determining needs and potential use in this deep-water fishery.

Once configurations are tested and reach 100% reliability for both release and line management, operational training workshop(s) will be held for recruited potential future Authorized Agents, Secondary Operators, crew, and Department-selected CDFW Law Enforcement personnel. After these workshop(s), fishers and enforcement staff will have the ability to demonstrate core competency with all equipment taught during the workshop(s). Further, they will be able to provide a general overview and understanding of all devices being trialed by other Authorized Agents. They will be trained in the protocols involved in the EFP, as well as data collection requirements. The workshop incorporates both dockside training, as well as inshore on-vessel training in depths of less than 35 fathoms. Authorized Agents must demonstrate the ability to deploy, retrieve, and reset the gear and conduct these activities independently before moving to Phase 2. Additional workshops will be scheduled if Department-selected CDFW Law Enforcement personnel deem it necessary.

Phase 2 – Finalize Individual Gear Configurations

SST staff and gear manufacturers will work with recruited and approved Authorized Agents to optimize their selected retrieval devices and preferred line management strategies for the Authorized Agent's individual fishing strategy. Once these configurations have shown a 100% gear retrieval rate (combined scoring of line management and release type) consecutively (n=>10), these configurations will be shared with CDFW and Law Enforcement staff and Agents will proceed to Phase 3.

Phase 3 –Fishing

The applicant and any additional Authorized Agents will begin fishing with SBRS configurations which will be deployed on 100% of pot gear, in accordance with their fishing strategies. Electronic Monitoring will be used in addition to Gear Marking applications that accompany SBRS gear manufacturer's devices to record the location and times of trap deployments and retrievals. During fishing activities, data will be collected on environmental conditions, location, and virtual marking performance as described above. The applicant and future Authorized Agents will

conduct at least 50 successful consecutive trials of each selected configuration. If at any time the minimum success rate of the devices is significantly below the standard for these devices (95%), testing will be halted, configurations will be adjusted and/or abandoned in favor of new configurations. Relevant data related to subsea buoy retrieval system gear testing will be processed, stored, and analyzed by Kim Sawicki.

2. **A list of target species expected to be harvested as samples or for compensation under the EFP, including anticipated amounts (weight or number) and proposed use (e.g., bait, sell, personal use, or other (e.g., research or tag and release)).**

Species Name	Weight or Number	Proposed Use
Brown box crab (minimum 5 ¾'' carapace width)	36,000 lbs.	Retain and sell; tag and release; research
California king crab (minimum 5'' carapace width)	36,000 lbs.	Retain and sell; tag and release; research

3. **A list of species expected to be taken incidental to fishing conducted under the EFP, including anticipated amounts (weight or number), proposed use (e.g., bait, sell, personal use, discard, or other (e.g., research or tag and release)), and a description of any measures that will be used to reduce incidental catch mortality. Add rows to the table below as needed.**

Species Name	Weight or Number	Proposed Use
Brown box crab	Up to 5,000	Tag and release
California king crab	Up to 5,000	Tag and release

Some sublegal-sized box and king crab may be tagged and released as listed above; all other incidental catch will be immediately returned to the water. Based on the available data from the current box crab EFP, most of the catch will be comprised of box and king crab; bycatch of other invertebrates and finfish has been relatively low relative to target catch. Information about the amount and composition of non-target species caught in box crab traps can be found in the DFW Report: *Update on the Box Crab Experimental Fishing Permit Program* prepared for the March 24, 2022 MRC meeting (link). These primarily include urchin, rock crab, other non-cancer crabs, and lingcod. However, the species identities and catch rates vary by region and method of sampling. Given that we are proposing to use the same types and number of traps with less participants, it is anticipated there will be similar or lower amounts of bycatch.

During the previous box crab EFP, fishers found that fishing over sand or at a rock-sand interface resulted in a higher ratio of catch of crab and lower catch of fish compared to reef habitat. Therefore, these soft-bottom habitats will be targeted. In addition, it was determined that cutting a hole of least 4 inches wide in traps allowed more sublegal-sized crab to escape, which both reduces bycatch and increases fishing efficiency; these openings will be made in traps under this

EFP. While no incidentally caught species will be retained or sold, samples may be provided to CDFW as requested, including sub-legal sized box and king crab, for research purposes.

4. **A description of the mechanisms that will be utilized to ensure that any proposed harvest limit for target and incidentally caught species are not exceeded and are accurately tracked or monitored (e.g., at sea fisheries observers, electronic monitoring, or other reporting method); and, if applicable, a description of the vessel's capacity to accommodate an onboard observer.**

CDFW Marine Region staff will monitor landings by permit-holders(s) and alert them when quotas for target catch are approached. Past participants in the box crab EFP had professional observers as well as video-based electronic monitoring document relatively minimal incidental catch in this experimental fishery, relative to target catch. Applicant and future Authorized Agents will provide vessels equipped to accommodate an onboard observer (i.e., current Coast Guard certifications and sufficient deck space) and to host observers (at CDFW's expense) on additional fishing trips, if requested by CDFW, particularly if new areas or habitats are explored where such data are not yet available.

5. **A description of any potential impacts on existing fisheries, habitats, or possible incidental interactions with threatened, endangered, or protected species (e.g., sea turtles, marine mammals, and birds) that could occur as a result of the project.**

This fixed-gear fishing activity does pose a risk for whale entanglement, including ESA-listed species that frequent southern California. However, we are proposing measures to reduce the risk of entanglement in gear from this experimental fishery. Using subsea surface buoy gear on all trawls will significantly limit the number of lines, as well as the amount of time those lines are extended in the water column; acoustic-release systems will allow hauling of gear as soon as buoys surface, and time-release systems will be serviced as soon as possible after their scheduled time of release. "Trawling up" will reduce the number of lines currently allowed in the water, 75 per vessel, to 37 or less per vessel. All lines will be marked as requested by the Department to help inform a future line-marking program in California and help identify this fishery in the event of an entanglement. As approaches to line marking evolve; this applicant is willing to test various line and surface gear marking techniques as requested by the Department. Traps can pose a risk to benthic habitat, but the applicant has experience fishing pot gear in soft sediments adjacent to reefs; this has been determined by past box crab EFP participants as the best habitat in which to catch box and king crab. Furthermore, this type of bottom helps reduce bycatch and situations which may create excessive gear loss Hence, anticipated effects from the traps contacting hard bottom areas are expected to be minimal. We will also use a series of techniques and devices for retrieval of any lost or malfunctioning gear. To date, these methods have resulted in a very high ratio of devices returned to the surface for inspection and determination of failure points. Box and king crab habitats are relatively deep compared to most other trap fisheries in southern California at typical depths of 400 – 800 feet. The potential for conflicts with other fisheries is low at these depths; other crabs and lobster are targeted at shallower depths, while spot prawn tends to be fished deeper.

6. **The type and amount of gear to be used, including gear specifications and design, and, if applicable, a description of any measures and/or devices that will be used to reduce**

bycatch. If the project involves gear modifications or other gear innovations, the description must include how CDFW staff can locate, retrieve, and inspect the proposed gear.

Trawls: Traps that meet the specifications of rock crab traps will be used to target box and king crab in trawls of two traps or more.

Line and Buoys: All trawls will utilize a minimum of one subsea buoy retrieval system (described below) so the line and buoys will be submerged until they are released.

Line and Buoy Marking: All lines and buoys will be marked according to CDFW request, indicating the fishery and fisher by their license number.

Subsea Buoy Retrieval Systems are innovative gear types which store buoys and their retrieval devices at depth, existing in the water column only when fishers are present. These systems allow the vertical line (rope) and buoy, to be stored at the ocean floor alongside the trap or removed entirely and replaced by an inflatable air bag/buoy. To retrieve this gear, the fisher sets a timer on the device before setting and/or sends an acoustic signal to the device to release the rope and the buoy to the surface when the fisher is ready to service the gear. Storing all fishing gear on the ocean floor greatly reduces the time that a line is in the water column and thus the risk of interaction by vessels or animals. Management strategies utilizing these technologies require utilizing a system accessible by enforcement agencies to replace the function of traditional marker buoys at the sea surface. This requirement led to the creation of a virtual multi-manufacturer (interoperable) gear marking portal, the Ropeless Manufacturer's Work Group HUB (**rmwHUB™**) which supports cooperative data-sharing efforts between companies so regional regulatory and enforcement bodies can determine their specific needs and preferences for data access and reporting. The rmwHub enables this to happen without creating duplicative and costly programming changes between manufacturer's applications and allows fishers to locate equipment quickly and avoid activities that may cause unintended gear loss.

The applicant plans to combine and test a variety of **releases** (Table 1) and **line management methods** (Table 2) to identify the best configurations for the box crab fishery. Additionally, applicant will utilize, test, and report on the ability of **SBRS Adjuncts and Methods for Retrieval of Potential Lost Gear** (Table 3) to ensure low or no gear loss during these trials. Lastly, applicant will use **Electronic Monitoring/Gear Marking** (Table 4) to avoid overlayment of other fishing gear and to provide an adequate interface for LED staff to perform their routine activities.

Table 1. SBRS Release Products

Manufacturer Name	**Release Models**	**Release Type** (*GTR/Timer/Acoustic*)	**% Reliability***
Desert Star Systems	ARC1-XD	Ranging Acoustic	97.8%*
Fiomarine	AC200 and F-Series Buoy	Acoustic with Timer back-up	99.84%*
Ropeless Systems	Ropeless RISER™	Acoustic with Timer back up air bag	98.73%*
Subsea Sonics	DAR4RT	Acoustic	99.6%*

**Per Sustainable Seas Technology, INC trials 2020-2023 (n>200)*

Table 2. Line Management Methods

Manufacturer Name	Line Management Method
Desert Star Systems	Rosskelly Mesh Bag
Fiomarine	Incorporated spool buoy
Guardian Ropeless Systems	Guardian Trawl-Groundline Sled
Ropeless Systems	Inflatable air bag

Table 3. SBRS Adjuncts and Methods for Retrieval of Potential Lost Gear

Manufacturer Name	SBRS Adjunct *(type)*
Blue Ocean Gear	Smart Buoy GPS tracking buoy
Grappling	Manual backup recovery system
Guardian Ropeless Systems	Galvanic Timed Release

Table 4. Electronic Monitoring /Gear Marking

Manufacturer Name	EM/Gear Marking	Type of Monitoring
Pelagic Systems	GPS Data Solar Logger	Recorded, uploaded once within cell range, 1 min ping
Spot Trace	Spot X GPS tracker	Real-time, 2.5 to 5 min ping
Subsea Sonics	Regulator Dashboard	Online Dashboard (Figure 1)
SSS Gear Vault	Gear Vault	Online Dashboard (Figure 2)
rmwHub™	rmwHUB Marine Mammal Commission	Interoperable Virtual Gear Marking Tool

The dashboard platforms that LED and CDFW Marine Region will be able to access integrate information collected in manufacturer's individual gear-marking applications which are then submitted to the rmwHub interoperable virtual gear marking system will allow only authorized CDFW staff to see where SBRS gear is deployed and when it's scheduled to surface.

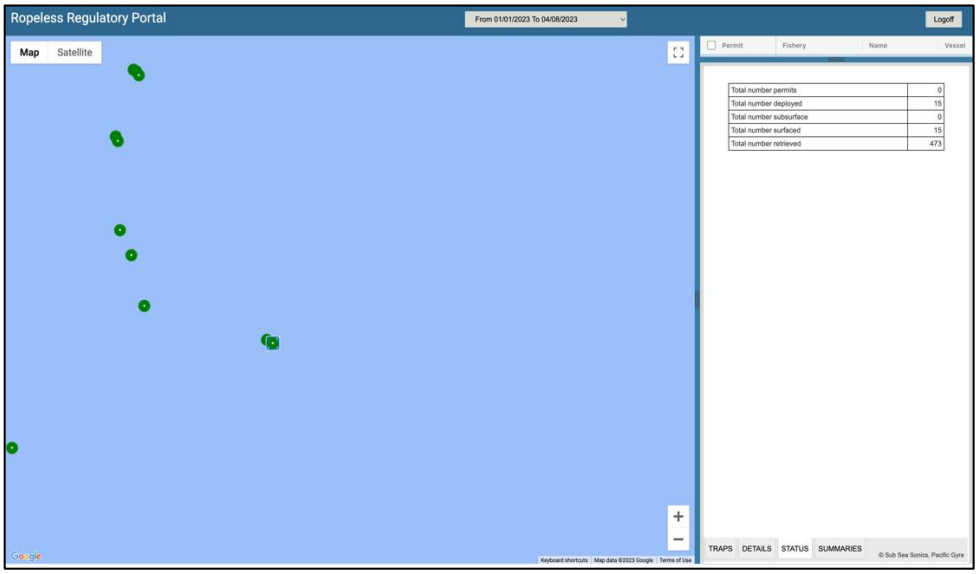

Figure 1. Subsea Sonics Regulator Dashboard

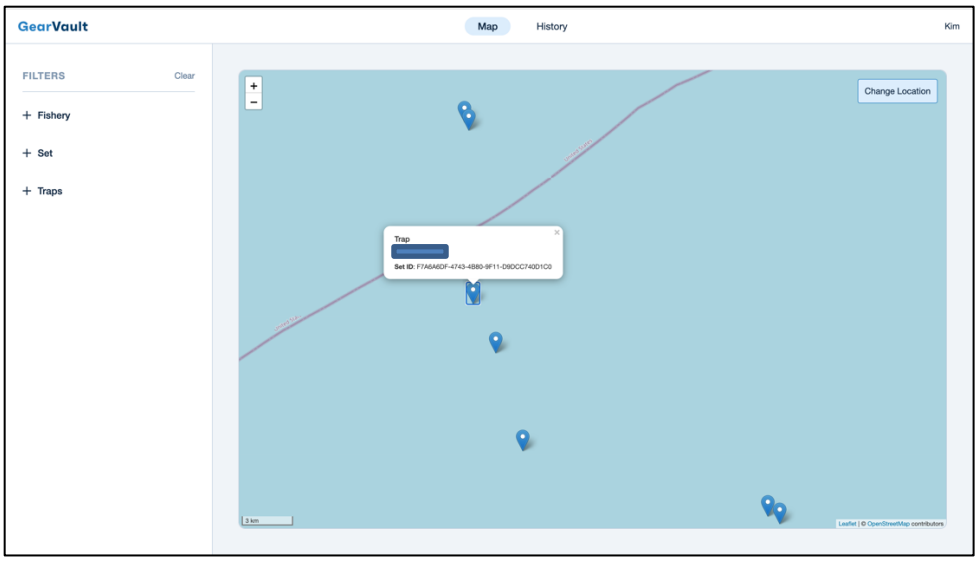

Figure 2. Sustainable Seas Technology, Gear Vault Dashboard

7. **The location and timing of the project. The description must include trip specifications, such as fishing depth, anticipated number of trips, expected trip duration, and estimated number of hauls and average soak time (for fixed gear) or estimated number of tows/sets to be made per day, and estimated duration and speed per tow (for mobile gear). For project vessels listed in Section F of this document, the description must also identify any fishing activity that is expected to occur on the same trip as the project for purposes other than those provided by the EFP (e.g., fishing before and/or after the EFP activities).**

The area proposed for box and king crab training and fishing are any state and federal waters south of Lopez Point (36°00' N) to the US-Mexico border between 10 and 150 fathoms in depth, except for any Marine Protected Areas and Essential Fish Habitat closures for bottom contact gear. The duration of fishing trips will be one to three days. Fishing will take place throughout the year. A maximum of 75 traps will be set in strings of two or more, resulting in up to 37 hauls per fishing trip. Traps will soak for a maximum of 96 hours unless weather or other safety reasons cause a delay. To minimize time and fuel costs and emissions, we request authorization to fish other permits held by the applicant(s) including rock crab, spot prawn, lobster, and groundfish during fishing trips for box and king crab.

F. PROJECT VESSELS (IF APPLICABLE)

Provide vessel information. Using the table below, complete a separate entry for each project vessel to be authorized by the EFP. For any vessel that will be used in commercial fishing activity related to the permit, the commercial boat registration number issued pursuant to FGC Section 7881 is required. For any vessel that will not be used in commercial fishing activity related to the permit, the commercial boat registration number issued pursuant to FGC Section 7881 or a copy of the United States Coast Guard (USCG) Certificate of Documentation is required. If there is no Certificate of Documentation for the vessel, a copy of the vessel's state registration is required.

Vessel Name	F/V Fourth Watch
Boat Registration Number or Documentation	**[Vessel ID omitted]**
Owner Name	Gregory Olsen
Owner Address	**[Address omitted]**
Owner Telephone Number	**[Phone number omitted]**
Operator Name	Gregory Olsen
Operator Address	**[Address omitted]**
Operator Telephone Number	**[Phone number omitted]**
Vessel Name	F/V Island Lady G
Boat Registration Number or Documentation	**[Vessel ID omitted]**
Owner Name	Dannial Major
Owner Address	**[Address omitted]**
Owner Telephone Number	**[Phone number omitted]**
Operator Name	Dannial Major
Operator Address	**[Address omitted]**
Operator Telephone Number	**[Phone number omitted]**

G. SIGNATURE

04/07/2023

Signature of Applicant Date

H. APPLICATION FEE PAYMENT