



This plan is submitted by The Cultured Abalone Farm, LLC to the CA Fish and Game Commission for the purpose of articulating the manner and extent of projected kelp harvesting activities for the five year period 2015-2020.

Background

The Cultured Abalone Farm LLC (TCAF) is a licensed kelp harvester. TCAF owns and operates Ocean Harvest, a 50' workboat customized for the task of mechanical harvest of kelp, *Macrocystis pyrifera*, from coastal kelp beds. TCAF holds two kelp bed leases; bed 26 which is serviced from the Santa Barbara harbor, and bed 208 which is served from the Morro Bay harbor. Additionally, TCAF harvests from Fish and Wildlife administrative "open" beds according to need, weather, and kelp canopy conditions.

We internally characterize open beds in two categories; primary open beds and contingency open beds. Primary beds are near to the harbor and have reliable, established canopies which enable us to spread out our harvesting effort over a large area to minimize repetitive cutting. Primary open beds serviced from the Santa Barbara harbor include beds 28, 25, 23, and 21 (which encompass an operating radius from Naples to Summerland). Contingency open beds are also established kelp beds but are further from the harbor and represent a higher cost and effort to harvest, therefore these beds are utilized conditionally, such as after canopy loss due to storm activity as occurred in March 2014. Contingency open beds serviced by Santa Barbara harbor include beds between Point Conception and Naples (29, 30, 31, 32) and beds between Summerland and Ventura (20, 19, and 18).

Harvest Plan Structure

Our proposed harvest plan will consist of the following sections: universal components describing details which are descriptive for all harvesting locations such as vessel details and landing methodology, and individual bed-specific components, which detail specific projected harvesting and management details for leased bed 26, leased bed 208, primary open beds, and contingency open beds.

Universal Components

For all kelp harvesting activities undertaken by TCAF, irrespective of bed, the following details are universally described:

1. Harvester Name and Contact. The Cultured Abalone Farm, LLC / 9580 Dos Pueblos Canyon Rd / Goleta CA 93117 / 805-685-1956 / culturedabalone.com
2. Harvesting Vessel. "Ocean Harvest" is a 50' LOA steel hulled modified landing craft with permanently installed equipment for the dedicated purpose of harvesting kelp. Tonnage is 23 GRT/18 NRT. Fuel capacity is 2x400gal tanks. US Coast Guard registration number is 1189178. CA Fish and Wildlife commercial vessel registration number is 06640.
3. Harvesting Operation. "Ocean Harvest" operates a purpose built hydraulic cutting system. Using modified agricultural equipment, kelp is cut by articulating blades that operate approximately 18 inches submerged below the surface while the vessel is piloted at very low speeds along the margin of kelp canopy. Cut kelp is lifted from the sea surface by a rotating stainless belt and deposited into a net bag with approximate capacity of one ton wet kelp. When full, the net bag is pursed and knotted to close the opening, then moved aft on the vessel into the cargo hold. This process is repeated until the required amount of kelp is on board. This operation is done at slow speeds and generally in calm conditions. Operation of vessel and harvesting equipment requires one captain and one crew.
4. Projected Total Annual Harvest Requirement. Approximately 1800-1900 wet tons of kelp per year, ***harvested variously from a combination of the beds described below on basis of conditions and availability.***
5. Landing Method. Net bags are weighed and recorded during unloading using a high capacity analog dial scale (AAA Weigh, Oxnard CA). Weights are recorded at time of landing. Total tonnage is recorded by date and location of harvest and provided to CA Fish and Wildlife along with royalty payments at month end in accordance with CA Dept of Fish and Wildlife Kelp Harvesting Regulations.
6. Transport to Facility. Net bags are transported directly to TCAF facility using a custom commercial truck (Peterbilt) equipped with hydraulic lifting equipment (Morgan Crane).
7. Repetitive Harvest Avoidance. Repetitive harvest is avoided using a combination of visual spotting and overlays of prior harvesting tracks on GPS/chartplotting equipment. Kelp canopy can consist of stalks "laying" along the sea surface. By choosing to cut on calm days with moderate tides, and by cutting from the margin of the bed, kelp plants are not pulled from the base/holdfast. Instead, impact on kelp plants is limited to cutting sections from the slack canopy on the sea surface.
8. Bull Kelp (Nereocystis) Avoidance. Bull kelp is generally avoided visually. Areas of kelp canopy with high amounts (greater than 10%) of bull kelp are avoided and tagged for future reference using GPS/chartplotter equipment. Bull kelp is not the preferred species of kelp for abalone forage and can be problematic for harvesting equipment.
9. Sea Otter Rafting Avoidance. Sea otter rafting groups are visually avoided. The kelp harvesting vessel operates at a very slow speed.
10. MPA Compliance. Vessel GPS/chartplotter equipment is loaded with points indicating boundaries of MPAs. Harvest records are maintained for MPAs which permit kelp harvest (bed 28). No harvesting is done in no-take reserves.

Individual Bed-Specific Components

The following details are specific to the location of kelp harvesting.

Leased Bed 26:

1. Bed Description. Bed 26 is from Hope Ranch Creek to Goleta Point, the “More Mesa” bed. This is one of the primary harvest locations due to proximity to the Santa Barbara harbor and its protection from ocean conditions.
2. Administrative Bed Status. Leased by TCAF LLC
3. Intended Use of Harvested Kelp. Abalone forage
4. Projected Monthly Tonnage. Up to 140 tons per month
5. Projected Annual Tonnage. Up to 1680 tons per year
6. Projected 5-year Tonnage. Up to 8400 tons

Leased Bed 208:

1. Bed Description. Bed 208 is from Point Estero to Von Helm Rock, the “Cambria” bed. This is a contingency harvest location. Harvest from this bed requires shifting cutting operations from Santa Barbara Harbor to Morro Bay Harbor, which results in high operating costs. Therefore, this bed may be harvested lightly or not at all in any given year, but provides security against disruptions in the availability of harvestable kelp South of Point Conception.
2. Administrative Bed Status. Leased by TCAF LLC
3. Intended Use of Harvested Kelp. Abalone forage
4. Projected Monthly Tonnage. Up to 120 tons per month
5. Projected Annual Tonnage. Up to 720 tons per year (6 month harvesting window per year)
6. Projected 5-year Tonnage. Up to 3600 tons

Primary Open Beds:

1. Bed Descriptions. The four primary open beds are bed 28 (Coal Oil Point to Gato Creek, the “Naples” bed), 25 (Rogue Creek to Hope Ranch Creek, the “Hope Ranch” bed), 23 (SB Breakwater to Lighthouse, the “Ledbetter” bed), and 21 (Loon Point to Montecito, the “Summerland” bed). These are primary harvest beds due to their proximity to the Santa Barbara harbor. They are harvested variously depending on kelp and ocean conditions, as needed, in order to maximize kelp quality and minimize harvesting stress on a single bed. Each bed has tradeoff qualities; for example Naples bed is more exposed and further away but can provide harvestable kelp conditions different from Summerland bed, which is closer and more sheltered.
2. Administrative Bed Status. All beds described here are currently listed as “open.”
3. Intended Use of Harvested Kelp. Abalone forage and 3rd party harvesting. TCAF occasionally receives requests to harvest kelp for a group or individual. This harvesting is done only from “open” beds and only during periods of overall kelp abundance, for example during high growth months.
4. Projected Monthly Tonnage. Bed 21: Up to 30 tons/month, Bed 23: Up to 10 tons/month, Bed 25: Up to 20 tons/month, Bed 28: Up to 30 tons/month

5. Projected Annual Tonnage. Bed 21: Up to 360 tons/year, Bed 23: Up to 120 tons/year, Bed 25: Up to 240 tons/year, Bed 28: Up to 360 tons/year
6. Projected 5-year Tonnage. Bed 21: Up to 1800 tons, Bed 23: Up to 600 tons, Bed 25: Up to 1200 tons, Bed 28: Up to 1800 tons

Contingency Open Beds:

1. Bed Description. The seven contingency open beds are bed 32 (Point Conception to Alegria, the “Cojo” bed), 31 (Alegria to Molino, the “Gaviota” bed), 30 (Molino to Refugio, the “Tajiguas” bed), 29 (Refugio to Gato Creek, the “El Capitan” bed), 20 (Loon Point to Rincon Point, the “Carpinteria” bed), 19 (Rincon Point to Pitas, the “Pitas” bed), and 18 (Pitas to Ventura, the “Emma Wood” bed). Any portions of these beds that lie within no-take MPAs, such as the western portion of Bed 32 within the Cojo SMR, are not utilized. These are contingency beds, meaning that in a “normal” year these beds would not be utilized or harvested from, primarily due to the distance from Santa Barbara harbor and the resultant cost of operation. During contingency circumstances, such as localized removal of kelp canopy by storm or other ocean condition activity, these beds would be harvested.
 - a. Therefore, we will project that contingency conditions will present in two of five years, for 4 months per year, and the projected tonnages below will follow that multiple.
 - b. Contingency harvest is not planned as an addition to harvest from leased and open beds, but as a substitute.
2. Administrative Bed Status. All beds described here are currently listed as “open.”
3. Intended Use of Harvested Kelp. Abalone forage (no 3rd party harvesting performed during contingency harvest conditions).
4. Projected Monthly Tonnage. Generally zero. When utilized, Bed 32: Up to 40 tons/month, Bed 31: Up to 10 tons/month, Bed 30: Up to 30 tons/month, Bed 29: Up to 20 tons/month, Bed 20: Up to 30 tons/month, Bed 19: Up to 30 tons/month, Bed 18: Up to 30 tons/month.
5. Projected Annual Tonnage. Generally zero. When utilized, Bed 32: Up to 160 tons/year, Bed 31: Up to 40 tons/year, Bed 30: Up to 120 tons/year, Bed 29: Up to 80 tons/year, Bed 20: Up to 120 tons/year, Bed 19: Up to 120 tons/year, Bed 18: Up to 120 tons/year.
6. Projected 5-year Tonnage. Generally zero. When utilized, Bed 32: Up to 320 tons, Bed 31: Up to 80 tons, Bed 30: Up to 240 tons, Bed 29: Up to 160 tons, Bed 20: Up to 240 tons, Bed 19: Up to 240 tons, Bed 18: Up to 240 tons.

Summary

1. TCAF LLC operates a 50’ LOA mechanical harvesting vessel, “Ocean Harvest,” to harvest kelp from California administrative kelp beds in compliance with Department of Fish and Wildlife kelp harvesting regulations.
2. Kelp harvesting occurs in both leased and open beds. All beds utilized are described in this document as either a primary bed or contingency bed, and are prioritized in their use by operation cost, kelp quality, and maintenance of kelp bed vitality.

3. Any 3rd party kelp harvesting occurs only in open beds and only under normal conditions of kelp productivity. No 3rd party kelp is harvested during contingency conditions.