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Deputy to the Chairperson

**STATE OF HAWAII**
**DEPARTMENT OF AGRICULTURE**
Plant Quarantine Branch
1849 Auiki Street
Honolulu, Hawaii 96819
Ph: 808-832-0589 Fax: 808-832-0584

February 13, 2018

To: Advisory Committee on Plants and Animals

From: Mr. Jonathan Ho, Acting Manager
Plant Quarantine Branch
Hawaii Department of Agriculture

Subject: Request to: (1) Allow the Importation of 750,000 In-Vitro Coffee Plants, (*Coffea spp.*) by Permit, for Propagation by Kona Hills LLC; (2) Establish Permit Conditions for the Importation of 750,000 In-Vitro Coffee Plants, (*Coffea spp.*) by Permit, for Propagation by Kona Hills LLC; and (3) Allow the Exemption of 750,000 In-Vitro Coffee Plants (*Coffea spp.*) from Costa Rica from Standard Quarantine, Subject to Establishment of Alternative Pest Management Conditions for Kona Hills LLC.

## I. Summary Description of the Request

***PQB NOTES:*** *The Plant Quarantine Branch (PQB) submittal for transmitting requests for import or possession permits has been revised to distinguish information provided by the applicant from procedural information and advisory comment and evaluation presented by PQB. With the exception of PQB notes, hereafter "PQB NOTES," the text shown below in section II from page 3 through the beginning of page 16 of the submittal was taken directly from Mr. Inman's application and subsequent written communications provided by the applicant, Mr. Inman, and in no way reflect the opinion of the PQB. For instance, the statements on the beginning of page 15 regarding effects on the environment are the applicant's statements in response to standard PQB questions, and are not PQB's statements. This approach for PQB submittals aims for greater applicant participation in presenting import requests in order to move these requests to the Board of Agriculture (Board) more quickly, while distinguishing applicant provided information from PQB information. The portions of the submittal prepared by PQB, including exemption or shortening of quarantine, advisory comments, and proposed permit conditions, are identified as sections III, IV, and V of the submittal, found on pages 16, 17, and 27, respectively.*

**COMMODITY:** Up to 750,000 In Vitro coffee plants, *Coffea spp.* The In Vitro plants are expected to be delivered in seven shipments of approximately one hundred thousand plants, with half being delivered in the April/May 2018 period and the second half being delivered in Nov/January 2019.

See Table 1 below for further variety information.

**Table 1.**

| **Parents** | **Variety** | **Variety** |
|---|---|---|
| Timor Hybrid / Villa Sarchi | Sarchimor | Victoria 1, 2, 4, 14 |
| Timor Hybrid / Villa Sarchi | Sarchimor | San Insidro 48 |
| Geisha | Geisha | Geisha 3 |

**SHIPPERS**: Mr. Marco Paez, General Manager, Cristal Vitro S.A., Apdo. Postal 1084-2050, San Jose, Costa Rica (See Attachment 1 for CV and other Cristal Vitro supporting documents)

Mr. Oscar Arias Rosabel, Gerente Comercial, Agribio Tecnologia, P.O. Box: 100-4003 Alajuela, San Jose, Costa Rica (See Attachment 2 for supporting documents)

**IMPORTER:** Mr. Darwin Inman, Manager, Kona Hills Coffee, 81-964 Haleki'i Street, Kealakekua, Hawaii, 96750

**CATEGORY:** The importation of coffee plants, Coffea spp., is regulated under chapter 4-70, Hawaii Administrative Rules (HAR), and in particular, sections 4-70-16 through 4-70-18, HAR. Under section 4-70-18, HAR, coffee plants or seeds for propagation may be imported under permit and must be held in a strictly enforced quarantine for a minimum of one year, or longer if necessary, in the judgment of the PQB Chief. However, section 4-70-6, HAR, authorizes the Board to exempt or shorten the quarantine period under certain conditions of importation or propagation procedure.

## II. Information Provided By the Applicant in Support of the Application

**PROJECT:** **Farmland Development:** The goal of the project is to convert the former golf course and housing development of the former Hokukano Ranch Lot 1-A (1393 acres, see attachment 3) and the Lower Kealakekua Heritage Reserve (500 acres, see attachment 4) back to farming. The properties are located at 81-6580 Hawaii Belt Road, Kealakekua, Hawaii 96750. Both properties are located in the Kona District on the Big Island of Hawaii and are adjacent to each other. At approximately 2000 acres, Kona Hills will be the largest coffee farm in Kona and the second largest in Hawaii. As of January 2018, Kona Hills has planted 75 acres out of the 500 acres planned in the traditional Typica variety.

At an average of one thousand trees per acre, the farm will require approximately two million trees for the total property. Over the last twelve months, Kona Hills has extensively sought trees and high-quality seeds from the coffee growing community in the USA and Hawaii. Due to the scale of the farm it was very difficult to domestically source the quantity, quality and varieties desired. Therefore, Kona Hills hopes to import 750,000 embryos from Costa Rica for two consecutive years. Delivery of seed will occur during two distinct periods during the year: April/May and Nov/Jan. Costa Rican coffee seeds are available and most effective for propagation between December to April. The varieties were chosen on the factors: availability, altitude, temperature, rainfall, yield, cup quality, cupping quality, customer request and resistance to coffee leaf rust (CLR). With this, Kona Hills is going to invest appropriate resources in infrastructure, enhanced farming practices and import in-vitro coffee embryos as a safe effective solution to prevent the importation of pests into the State. Post importation and quarantine, Kona Hills will be self-sufficient and able to provide seeds for tree propagation and variety replacement as needed.

***PQB notes:*** *A reduction in the quarantine period is subject to Board approval on a case by case basis. Import permits are only valid for 365 days after the date of issuance. Though the applicant is proposing to import in-vitro plants over the course of two years, this request is only for the initial 750,000 plants. Future importations requesting a reduction in the quarantine period will have to brought back to Board of Agriculture for approval of a new permit.*

Additionally, Kona Hills expects to build a laboratory testing facility, apply drone technology, and have weather stations to monitor our farm and surrounding farms. Kona Hills has contacted local government

research facilities to share data and resources in the future and is in contact with Hawaii Agricultural Resource Center, USDA-ARS, University of Hawaii and University of Costa Rica to provide consulting services, employee training and diagnostic services to identify and prevent any issues due to: bacteria, fungi, insects, viruses or other pests. Kona Hills is working to develop an acceptable random sampling system to test plants periodically to identify issues earlier and resolve potential pest issues utilizing appropriate treatments up to destruction via incineration if needed.

As a result, Kona Hills is requesting:

(1) A reduction in the one-year quarantine period to a six-month period, due to our respected vendors method of selecting, treating, and transporting the seedlings in a sterile medium that will greatly reduce the introduction of any coffee pests. The embryos will spend 10 weeks (six weeks in laboratory and four in nursery) in a sterile agar jar environment prior to being transplanted to growing tubes. When the plant roots outgrow the tubes (at approximately 6-9 months), Kona Hills would like to move the plants directly to the field when they have outgrown the tubes.

(2) To operate and maintain a state-approved quarantine facility at the Kona Hills nursery due to the size of the importation request. The Kona Hills quarantine facility is isolated from the community and surrounding coffee farms and has the capacity to appropriately quarantine the requested coffee plants.

**OBJECTIVE:** Kona Hills objectives are the following:

1) Secure seed supply: import seeds to fully plant 1500 acres over a two-year period.

2) Risk management: protect the farm from CLR and Nematodes.

3) Optimize yield: variety choice based on altitude (1500 to 3000 feet), wind and rainfall.

4) Commercial: plant varieties with excellent taste, yield and global wholesale roaster demand.

Kona Hills would like to enhance and protect the future of our coffee farm along with the greater coffee industry in Hawaii. Kona Hills is developing the former golf course and housing development into a world class coffee plantation. The project objective is to build a coffee

farm of scale that can meet the demands of the largest wholesale coffee roasters in the world. Currently, Kona Hills has no plans to be a coffee roaster or compete in a retail setting. Our niche is to sell to the top six specialty coffee buyers of large volumes of 100% Kona estate coffee.

Kona Hills hopes to elevate the local coffee community through our scale, expertise, access to resources, equipment and pricing power for farm inputs. Kona Hills does not view itself as a competitor to the local coffee community. The statistics are that out of 900 growers in Kona coffee less than five sell to the largest global roasters. Most cannot meet the consistent cupping quality, volume or best practices criteria in farm and operations of the largest roasters. Kona Hills vendors have assured Kona Hills that cross pollination between the new varieties (of which Geisha is already in Kona) and the traditional Typica variety is less than a 3% probability. Also with the isolation of the property Kona Hills deems this issue to be highly unlikely.

With that goal in mind, Kona Hills would like to introduce new varieties to the Hawaiian agriculture community that resist Coffee Leaf Rust, *Hemileia vastatrix* (CLR), and/or have excellent cupping characteristics. CLR has decimated the economies of many countries in recent years, namely in Central America (see Attachment 5). The islands of Hawaii have few varieties, in scale, available to protect/replace against CLR infestation. An infestation of CLR, along with the existing conditions of Coffee Berry Borer and nematodes, would cripple the Hawaiian coffee market for many years to come including our project.

In a presentation to the Specialty Coffee Association 2017 (See Attachment 6) it was cited by an industry expert the following statistics:

-CLR is the single biggest threat to the Latin America coffee industry.

-CLR affects 68% of coffee farms in Costa Rica (ICAFE)

-Last year, Mexico lost 46% of coffee production at an economic loss of $70M (ANICAFE).

- Starbucks and the "One Tree for Every Bag" program has distributed 10 million trees at a cost of $25M to El Salvador, Guatemala, and Mexico.

The following is data from "Prevencion_y_contol_de_la_roya_del_cafe" paper produced by World Coffee Research, US AID, and CATIE (Centro Agronómico Tropical de Investigación y Enseñanza).

Estimated losses caused by the CLR outbreak in the production cycle 2012-2013

| Country | 2011-2012 harvest, expressed in millions of green 100lbs. Bags | 2012-2013 loss, expressed in thousands of green 100lbs. Bags | Loss % |
|---|---|---|---|
| Honduras | 7.1 | 2192* | 31* |
| Guatemala | 4.85 | 730* | 15* |
| Costa Rica | 2.01 | 97** | 5** |
| Nicaragua | 2 | 58** | 3** |
| El Salvador | 1.5 | 442** | 23** |
| Panama*** | 0.29 | 38.6** | 13.5** |
| Total | 17.75 | 3557.6 | Average: 15% |

Taken from: Prevención y control de la roya del café, published by CATIE. *Reduction in yields in comparison to the 2011-2012 harvest mostly caused by CLR. **Production decrease according to the harvest estimates for the 2012-2013 harvest, mostly caused by CLR. *** Estimations derived from information provided by MIDA Panama (Ministry of Agricultural Development)

**PROCEDURE:** Coffee embryos will be shipped in sterile medium jars that have been selected and prepared in sterile laboratory conditions in Costa Rica. There will be no in-vitro lab services done in the US. The importation procedure will involve three globally recognized service providers: (1) The coffee seeds will be provided by Starbucks Farmer Support Center-Hacienda Alsacia Research & Development Center in Costa Rica; and the in-vitro laboratory services will be provided by both (2) Cristal Vitro, S.A. and (3) Agribio. The three vendors will collaborate and support Kona Hills in identifying and importing highly productive coffee varieties that are CLR resistant and/or possess high cupping standards. Cristal Vitro, S.A and Agribio will follow globally accepted phytosanitary in-vitro methods to sterilize, prepare and pack chosen coffee seed embryos in agar jars/bags for shipment directly to Kona Hills Nursery and Farms. Kona Hills will receive the agar jars and bags at our nursery quarantine facility, and will grow the embryo seeds to term. Once approved for release from quarantine by the PQB, the healthy trees will be placed into the adjacent Kona Hills Farm. There will be a daily pest prevention and inspection program developed under the supervision of the HDOA and the Kona Hills agronomy staff.

***PQB notes:*** *The applicant intends to use a very specific plant tissue culture process using embryos of individual, mature coffee seeds that are sterilized and grown in-vitro on sterile media prior to shipment. This process is distinguishable from traditional micro-propagation techniques to create genetically identical clones of parent plant materials.*

**Coffee Seed Selection and Sterilization Process:**

***PQB notes:*** *Some of the pesticides proposed for use are not labeled for Coffee, however, as the treatments will be conducted in Costa Rica, they are not subject to Federal and State Pesticide Labeling requirements.*

**Phase I-** Starbucks Farmer Support Center in Costa Rica, will screen and select seeds free from contamination. They will de-pulp and dry the seeds down to 20-25% humidity. As an additional step, all seeds will be treated with the fungicide, Vitavax per recommended manufacturers dosage, prior to shipping to Cristal Vitro and Agribio Laboratories. Vitavax® is a flowable fungicide which provides systemic control of seed and seedling diseases.

About Starbucks Farmer Support Centers
Starbucks operates Farmer Support Centers in key coffee-growing regions around the world to provide local farmers with resources and expertise that can help lower their cost of production, reduce pest and disease, improve coffee quality and increase the yield of premium coffees. Starbucks opened its first Farmer Support Center in 2004 in Costa Rica, and has opened new centers in China, Colombia, Ethiopia, Indonesia, Rwanda and Tanzania. The Costa Rica center donates millions of seeds every year to over 200 farmers in Central America. The "Open Source Strategy" program provides seeds to coffee growers as a way to support the sector globally. It has been an influential partner in Central America countries affect by CLR.

**Phase II-** Cristal Vitro and Agribio will accept, screen and then prepare the coffee seeds for the embryo rescue process by doing the following steps listed below (See Attachment 7 for further information about the ingredients and process used):

**Step 1:** Seeds will be treated a second time with Vitavax® fungicide. The coffee seeds upon receipt undergo an extensive soaking process to thoroughly cleanse, and disinfect the seeds.

**Step 2**: Post soaking, seeds are separated from the parchment in a solution of water and detergent. Seeds are soaked for three minutes to completely remove the Vitavax®. At the same time, the silver skin is manually separated from the seeds.

**Step 3**: Post cleaning, the seeds will be moved into a solution bath containing Benomyl® and Agri-mycin® for 1 hour. Benomyl® and Agri-mycin® are fungicides that stops bacterial growth by damaging cell membranes, and protein synthesis.

**Step 4:** The seeds are rinsed for three minutes and then submerged into a solution of 2% sodium hypochlorite and Tween 20 for twenty minutes. The seeds are then rinsed in laminar flow chambers with sterile water. Sodium hypochlorite is a bleaching and disinfection agent. Tween 20 is a non-ionic detergent.

**Step 5:** Post cleaning the embryos are extracted in a sterile environment (slides, instruments, etc.), and placed into sterile embryo jars/bags that spent 20 minutes in an autoclave at 121 degrees Celsius at 1 atm.

**Step 6:** Weekly the agar jars and bags are inspected. If any contaminant has entered the embryo jars and bags, both jar and plants are discarded from the laboratory. In week 4-6, the sterile tissue agar jars are inspected again then are ready for shipment to Hawaii. Kona Hills will work with HDOA PQB staff to inspect shipments in Costa Rica prior to shipment to Hawaii for quarantine.

**Key Business Statistics for Cristal Vitro, SA:**

1) number of customers: approximately 150
Representing USA, Puerto Rico, Dominican Republic, Philippines, Ivory Coast, Mexico, Guatemala, Colombia, Honduras, Nicaragua, Panama, Angola, and Bolivia
2) plant varieties: coffee, bananas, plantains, strawberries, mandioca, ornamental, potatoes, and blackberries
3) number of plant micro propagation per year: 5 million units
4) customers in US:
Walters Garden: Grand Rapids, Michigan
Puerto Rico: Plantas de Puerto Rico, Hacienda las Carolinas, Bananera Fabre
5) corporate multinational customers: Del Monte, Chiquita, Dole and Syngenta

**Phase III-** Upon arrival in Hawaii, PQB staff will inspect all plants, and if they meet import requirements, will be released to begin the quarantine period in Kona Hill's approved quarantine facility. Kona Hills will coordinate with PQB staff to conduct periodic inspections of all plants throughout the duration of the entire quarantine in addition to the daily scouting of plants by Kona Hills staff in addition to the following listed below:

**Step 1:** At the Kona Hills quarantine facility, the plants will spend the initial four to six weeks in agar jars until they outgrow the agar jar. Once this occurs, the plants will then be rinsed individually and placed into traditional nursery growth tubes containing a soil and fertilizer

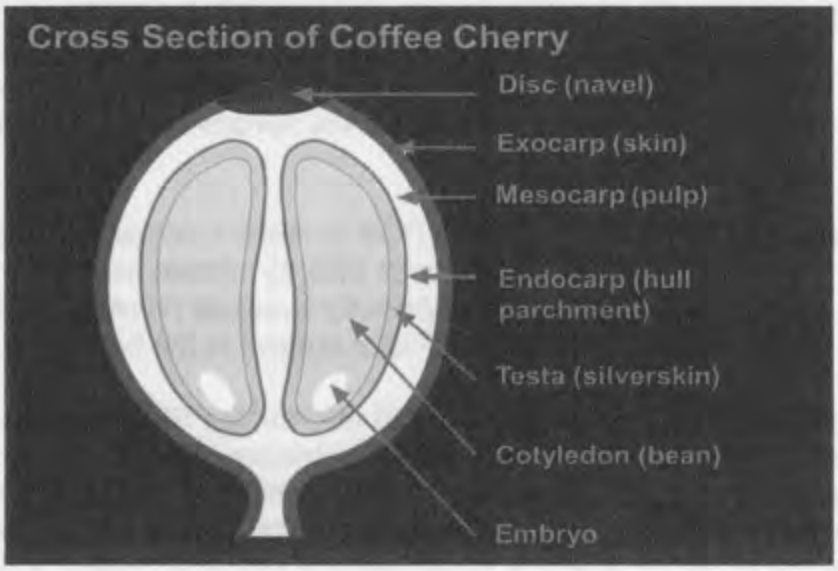
mixture within a dedicated quarantine room. The plants will remain in this room for the entire duration of the quarantine to continue the normal pathway of a growing plant.

**Step 2:** The plants will spend the next eight to twelve weeks in tubes, with eventual movement to larger grow bags in the nursery, within the enclosed quarantine facility. The plants will remain in the grow bags within the nursery for the remainder of the quarantine duration.

**Step 3:** Kona Hills will contact PQB to make arrangements for plants to undergo a final inspection prior to release from Quarantine. Upon release, plants are eligible for eventual planting into the farm when deemed ready to be able to survive in the field.

**Medium inside the Agar Jars and Bags:** MS (Murashige Skoog) Medium; is one of the most commonly used culture plant media, containing different macro and micro-nutrients, vitamins, phytohormones and other adjuvants (like coconut water) as well as sucrose. The pH of the medium is adjusted to an approximate of 5.8 using dilute NaOH or HCl and a suitable gelling agent is added when a semisolid matrix is desired. Agar (8-10 g/l) and the gellan gum known as Phytagel® or Gelrite® (2-3 g/l) are two of the most common gelling agents used for plant tissue culture media; the medium will be sterilized by being placed into an autoclave for about 20 minutes.

**Cross Section of Coffee Cherry:**




**DISCUSSION:**

1. **Person Responsible:** Mr. Darwin Inman, Manager, Kona Hills Coffee, 81-964 Haleki'i Street, Kealakekua, Hawaii, 96750

2. **Safeguard Facility and Practices:** Kona Hills Nursery and Farms-Hokukano Ranch Lot 1-A, 81-6580 Hawaii Belt Road, Kealakekua, Hawaii 96750.

***PQB Notes:*** *A site inspection approving all proposed design features, practices and procedures will be conducted prior to permit issuance.*

Kona Hills Coffee will only accept shipments that are approved by PQB prior to entry into Hawaii. Kona Hills Nursery-Hokukano Ranch Lot 1-A, is a 1,393-acre parcel of agricultural land that is isolated from other commercial farms and over one mile from the nearest commercial coffee farm (Greenwell Farms). The nursery and its facilities are held under lock and key by senior managers of the Kona Hills staff with fences and security monitoring services.

It is expected to have a total of ten personnel servicing the facility: seven nursery staff (non-management), two senior agronomy staff, and Mr. Inman. There will be daily monitoring of all individual plants for pest management and surveillance as well as for culling.

There will be less than five individuals with access to locks for the property and the existing nursery is not near a main, general public thoroughfare. It is approximately one mile away from the main thoroughfare. The isolation of the facility allows us to control access by both the general public and non-authorized personnel. The farm and nursery are situated within a larger development that has gate security from the main thoroughfare. The actual nursery has a secure fence of eight feet tall that is under lock and key and is under surveillance. A secondary fence will surround the actual quarantine area further segregating the area and further restricting access to the seedlings during the quarantine period. There will be less than five individuals with access to locks for the property.

**KONA HILLS EXISTING STRUCTURE:**

**Expected Modifications** –
Kona Hills will complete the following modifications to the existing structures prior to the importation of any coffee plants (see Attachment 8):

-Creating external walls around each shade house using thick industrial plastic or other approved materials proven to prevent airborne spores from spreading between quarantine rooms. This plastic or other material will also be used to segregate individual shipments from each other to create quarantine rooms within the existing structure. This will prevent the introduction and spread of pests within the quarantine areas. Existing structures have been permitted with the County and are windproof and hurricane permitted. Any new structures will undergo the same strict design criteria.

-Additional fencing to restrict access to plants throughout the quarantine period as well as creating a single point of entry to the quarantine area. This will further limit access to only authorized personnel.

-Employee changing rooms. Employees will use dedicated work wear while inside the quarantine area to ensure there is no introduction of disease pathogens or other pests.

-Foot baths at the entrance to the quarantine houses and between quarantine rooms.

-Security check in and cameras. All authorized staff will be required to log when they will be entering or exiting the quarantine areas. The use of 24-7 security cameras throughout the premises will help ensure compliance as well as deter potential theft or vandalism of the facility and plants while in quarantine.

**Internal Nursery Modifications**

-Use of enclosed growing bed areas as depicted below for the growing environment.

-Flooring will be cleaned daily with chlorine bleach in addition to the use of employee foot baths at the entrances to each quarantine room.

-Installation of an on-site incinerator to destroy any potentially infested plants and/or planting medium as well as any culled plants.

-Installation of UV sterilization on recycled water prior to reuse.

-We expect them to be constructed as in follows in the next two photos:

***PQB Notes:*** *PQB is working with the applicant to design an appropriate quarantine facility to house the coffee plants with safeguarding features to minimize pest outbreaks and facilitate inspections and monitoring. A site visit was conducted by various PQB staff on February 6, 2018 to see the existing facility and to further discuss appropriate design specifications. Prior to permit issuance, a site inspection confirming all proposed design features, practices and procedures will be conducted.*

3. **Quarantine Protocols and Method of Disposition:** Kona Hills Quarantine and Nursery will utilize a daily examination schedule at every step of the importation and growth process to quickly identify and eradicate any pests or plants that may be contaminated in the nursery. We will have senior agronomy staff making daily inspections to identify any medium whether in agar jars, or later as plants, that must be removed. While plants are still in flasks, should a flask be broken, staff will contain the spill, gather the contented in a sealed container, disinfect the surrounding area with bleach, incinerate all contents, and document the incident on the inventory and inspection report logs. Staff are trained to recognize diseases and insects of concern on the plants as well as to look for symptoms of pests such as: insect feeding damage, insect frass, fungal spores, leaf curling, etc. Should there be a detection of any pests (insects, diseases, etc.), PQB will be notified; a sample will be collected and identified; and all infested plants subjected to an appropriate, PQB approved treatment to eradicate the pest. If there is no such treatment, any infested plants and planting media are immediately destroyed via incineration. It is understood that depending on the identification of the pest(s) and amount of plants that are infested, the entire shipment may need to be destroyed. At the end of the quarantine period, a final inspection will be conducted by PQB inspectors to confirm pest-free status, then the plants from that particular shipment will be released. However, should any pests be discovered, the quarantine period may be extended to ensure that any pests are eradicated prior to release.

   Kona Hills will conduct pest preventative measures utilizing periodic applications of appropriate insecticides and fungicides throughout the entire quarantine period. We will document all pesticide applications to ensure no pests can

develop on the plants throughout the quarantine period. However, should there be any pest outbreak, Kona Hills will immediately notify the PQB and will test the plants and pests to determine additional treatments to ensure all pests are eradicated from the quarantine area. Appropriate action (identification, treatment and/or destruction) will be conducted immediately should an issue be discovered. The PQB will approve and witness treatments for any pest outbreaks and will conduct follow up inspections to ensure that the pest detected is eradicated. If it is deemed necessary to destroy the plant materials, the use of clean, sturdy, sealed, leak-proof containers will be used to contain all infested materials until they can be disposed of via incineration. These containers will either be disposed of with the infested materials, or will be disinfected using a 10% sodium hypochlorite solution for a minimum of 30 minutes prior to additional use. We will utilize a system to record all applications of pesticides, pest outbreaks and documenting until the issue is resolved.

Kona Hills will utilize a centralized water source and expects to recycle water subjected to UV sterilization to kill pathogens and prevent them from entering the surrounding environment or prevent them from spreading throughout the quarantine facility. To ensure that there is no system failure, the system will be monitored daily, the system is equipped with alarms for bulb failure, and a redundant system will be installed. Adequate numbers of replacement bulbs will be maintained. In addition, the water system can be switched to a non-recycled source should both systems fail.

4. **Abstract of Organism:** The following varieties have been identified by our global seed supplier as being conducive to the environmental conditions in Kona:

**Victoria (1,2,4&14) and San Isidro 48**
These five varieties belong to the Sarchimor group; this being a junction between Villa Sarchí and Híbrido de Timor (HDT), which gather both the cup quality of V. Sarchí and the Coffee Rust resistance from the HDT. (ANACAFE, 2017) a.

The original cross was performed in Portugal, creating a F1 that was later brought into Brazil and then to CATIE (Tropical Agronomical Center of Research and Teaching) in Costa Rica, who designated it as T 5296; the varieties mentioned above are F7 selections from the T 5296, which were developed by the Starbucks Farmer Support Center in Costa Rica, in the province of Alajuela at an average elevation of 4700 ft. The size of the plants is dwarf and both productivity and cup profile is equal or superior to the traditional coffee varieties. All these coffee varieties were selected at 1,600 meters from the sea level and then were moved to 1,000 meters, so the adaptation to different elevation range is very good.

The initial process began in 2005, with 65 lines that continued being tested and selected through the years, resulting in 17 varieties that continue being selected in different regions of Costa Rica, Guatemala and China. The research process has been going on for 12 years, being compared with the traditionally used Caturra and Catuai varieties; the considerations taken for the selection were based on stability of the cup quality, productivity and phenotypic characteristics, meaning that none of these varieties have been developed through GMO methods.

The varieties show resistance to the CLR strains and also possess an excellent cup quality when compared to Caturra and Catuai.

Victoria 4 and Victoria 14 and San Isidro 48 have shown very good performance on dry weather conditions, which could be significant in the presence of changes in the rain patterns.

**Geisha G 3:**
Geisha is a multiline variety that was found in the Geisha District in Ethiopia, it was introduced to different research centers in Kenya in 1936 and it was brought to Costa Rica in 1953, coded as T-2722. (Ramirez, 2014
These lines came to Costa Rica searching for resistance to coffee leaf rust as a multi-line. The Starbuck Farmer Support Center has been creating lines from individual plants in order to improve productivity, cup profile and having a more uniform structure of the plants. Geisha as individual lines are very stable since had been naturally selected since many years ago. Geisha is very dependent on altitude in order to express its floral attributes.

The Starbucks Farmer Support Center in Costa Rica, has been selecting 26 lines of Geisha, based on the phenotype, productivity and the cup profile; the Geisha Line 3 has proven to be one of the best, based on these attributes.

**San Roque**
A Typica selection, improved through years of field observation and collection of stand out plants. San Roque won the Costa Rican Cup of Excellence in 2015. Typica is an old coffee variety with many components, the Starbucks Farmer Support Center selected individual plants over multiple generations to create a stable variety. San Roque has a very good cup profile and is not dependent on elevation to express its attributes.

5. **Effects on the Environment:** Under the supervision of the Hawaii Department of Agriculture PQB, the environmental impact is expected to be minimal, if any, due to: (1) The utilization of sterile, in-vitro coffee embryo tissues for importation; (2) Growth and monitoring of all plants in a controlled quarantine environment that is isolated from the surrounding community; (3) Daily pest surveillance and immediate corrective action should a pest be detected; (4) Scheduled treatments

with appropriate pesticides for pest prevention throughout the entire quarantine period; (5) A water recycle program utilizing UV sterilization to control pathogens in the irrigated water of the quarantine facility; and (6) Incineration of all culled or diseased plants. 7) Kona Hills vendors have assured Kona Hills that cross pollination between the new varieties and the traditional Typica variety is less than a 3% probability. Also with the isolation of the property Kona Hills deems this issue to be highly unlikely.

## III. Exemption or Shortening of Quarantine

Under section 4-70-6, HAR, the Board may exempt or shorten the period of quarantine under certain conditions of importation or propagation procedure. This has been done in certain instances in the past when the applicant could satisfy specific conditions the Board determined were appropriate to prevent the introduction of insects, diseases, or any other pest, in lieu of a quarantine at a state quarantine facility.

In June of 1990, the Board approved a request from AmFac Agribusiness for the early release of coffee seedlings that had been grown in a California Nursery where the seedlings were monitored by plant pathologists, entomologists, and plant quarantine inspectors from California and Hawaii. The plants were found to be apparently free of pests and diseases, and then subjected to further post-entry inspections at AmFac's operation on Maui.

Due to the volume of plants that are proposed for the applicant, Kona Hills' importation, PQB does not have sufficient quarantine facility space to accommodate all the plants. Generally speaking, the number of plants in prior shipments of coffee plants will fit in one to three 6 foot by 8 foot quarantine rooms. The average dimensions of PQB's Quarantine rooms were designed for average shipment sizes of restricted plants. Currently, there is no state quarantine facility large enough to house Kona Hills' 750,000 seedling plants for the entire quarantine period. As a result, this import request includes a request for approval of a PQB-approved quarantine facility on Kona Hills property that will be subject to periodic inspections by PQB staff throughout the quarantine duration, in conjunction with pre-arrival pest mitigation efforts to ensure pest-free importation of the coffee plants. Section 4-70-4, HAR, authorizes PQB to approve a non-State quarantine facility for the quarantine of plants, pursuant to the PQB chief's certificate of approval attesting to the facility's construction as proper and adequate to prevent the escape of an insect, disease, or other pest.

## IV. Advisory Subcommittee Review

This request was submitted to the Advisory Subcommittee on Bacteria, Advisory Subcommittee on Entomology, Advisory Subcommittee on Fungi, Advisory Subcommittee on Plants, and the Advisory Subcommittee on Viruses for their review and recommendation in early January 2018. Their recommendations and comments are listed below. Due to initial Subcommittee comments, the applicant revised their import request and the request was subsequently re-submitted to the respective Advisory Subcommittees for additional comments and or recommendations which PQB is awaiting.

1) **I recommend approval ___ / ___ disapproval to Allow the Importation of up to 1,500,000 In-Vitro Coffee Plants, (*Coffea spp.*) by Permit, for Propagation, by Kona Hills LLC.**

**Advisory Subcommittee on Bacteria:**

Dr. Tung Hoang: Response pending

Dr. Aaron Jacobs: Recommends Approval.

Dr. A. Christian Whelen: Response pending

Dr. Raquel Wong: Recommends Approval.

> Comments: "No impact to animal health is seen with the importation of this commodity. Approval to import is in relation to my scope of expertise in veterinary medicine."

**Advisory Subcommittee on Entomology:**

Dr. Jesse Eiben: Recommends Approval.

> Comments: "Within my entomological expertise, these conditions laid out in the application mitigate essentially all insect risks with importation, as long as the conditions are met. The sterilizing procedures of the seeds, growing conditions and time of growth outside of Hawaii, and inspections prior to shipments should eliminate all insect pests."

Dr. Peter Follett: Response pending

Dr. Frank Howarth: Response pending

Mr. Darcy Oishi: No Recommendation.

Comments: "I cannot recommend approval or disapproval of this submittal. There is a lack of sufficient substance to evaluate this submittal. Where are the Standard Operating Procedures that will be employed? How will sampling for diseases be done? What is the intended schedule for disease surveillance using molecular tools? Every month? Every week? What will be the IPM schedules and programs be for pest monitoring and control? Where is the basic floor plan for the quarantine facility? What safeguards will be employed? Is there negative air pressure in area(s) where plants will be held? These issues must be presented to subject matter specialists to adequately evaluate this request. The volume of plants being imported over a short period of time presents difficult in assessing the risks and the adequacy of mitigation efforts."

***PQB notes:*** *PQB has relayed these comments to the Applicant.*

Dr. Daniel Rubinoff: Response pending

Dr. Mark Wright: Recommends Approval.

Comments: "The request submitted includes some very stringent quarantine procedures, which I believe would be effective in preventing introduction of pathogens and pests. It is evident the PQ has worked closely with the applicant in developing a suitable procedure for the introduction and quarantine."

**Advisory Subcommittee on Fungi:**

Dr. Stephen Ferreira: Response pending

Dr. Aaron Jacobs: See response in Advisory Subcommittee on Bacteria.

Dr. Mann Ko: Recommends Disapproval.

Comments: "Is USDA APHIS PPQ going to be involved in this project, since it involved foreign countries? Is it going to be approved by them first before the project can be moved forward? Anyway, in my opinion, the following information are needed before consideration for approval:

a. Resistant status of the proposed coffee varieties (to be imported) vs. the local pests/diseases there as well the resident pests/diseases in Hawaii. We have the Hawaiian pests/disease here such as the Kona root-knot nematode (*Meloidogyne konaensis* sp.), *Cercospora coffeicola*, *Colletotrichum* sp., *Phomopsis* sp., coffee berry borer, lobate lac scale etc. and the serious economic pests/diseases of coffee that occur in Central America but not in Hawaii yet, such as the Coffee Leaf Rust, American Leaf Spot, Web Blight

(*Ceratobasidium koleroga*), and the Pink Disease (*Corticum salmonicolor*). The 1.5 million plants might be a potential reservoir for the local pests/diseases if they are very susceptible, putting the rest of the coffee farms in the State at risk. Also, if susceptible, they might be the potential hosts to harbor the pests/diseases that may accidentally be introduced to Hawaii.

b. The containment facility in Kona Hill. Is the construction or modification of the quarantine facility to house these coffee seedlings going to be strong enough to withstand the elements that include flash floods, high or hurricane force winds that could happens at Kona? No mention of these in the Construction Section.
c. Is the facility going to be environmentally regulated to provide conducive conditions for the embryos in the agar jars to grow to desirable plant sizes under all the seasons at Kona?
d. Expected survival rate of these 1.5 million in-vitro coffee plants (to maturity) before they are released from the quarantine facility. Is the proposed Kona Hills facility able to handle and grow all the plants if they all survive?

Provide efficacy and supporting data in the seed surface sterilization step of using the fungicide Vitavax. What are the rate and duration to be used that would completely eliminate the coffee rust and the above mentioned plant pathogens (those not yet occurring in Hawaii) from the seeds/embryos?"

***PQB notes:*** *PQB has relayed these comments to the Applicant. PQB is also iin communication with USDA regarding this proposed importation request. Regarding comment b, the applicant has stated that the structures are approved via county permits for high winds on page 12. Regarding comment c, the applicant's response is "yes." For comment d, the applicant's response is "There are two phases of importation- 750,000 each year. There is expected to be a 20% mortality rate. Yes, the facility will be able to accommodate the volume as there will be two delivery periods- April/June and Nov/Jan. So the nursery will maintain less than 400,000 over a six month period."*

Dr. Susan Schenck: Recommends Approval.

Dr. A. Christian Whelen: Response pending

Dr. George Wong: Recommends Approval.

Comments: "Although that's a lot of plants, precautions for import seem to be more than adequate."

**Advisory Subcommitte on Plants:**

Dr. H.C. Bittenbender: Response pending

Dr. Susan Schenck: See response in Advisory Subcommittee on Fungi.

Ms. Stephanie Whalen: Response pending

Dr. Steven Montgomery: Recommends Approval.

**Advisory Subcommittee on Viruses:**

Dr. John Hu: Recommends Approval.

Dr. Stephen Ferreira: Response pending

Dr. Hongwei Li: Recommends Approval.

Dr. Aaron Jacobs: See response in Advisory Subcommittee on Bacteria.

Dr. Michael Shintaku: Recommends Approval.

Dr. A. Christian Whelen: Response pending

Dr. Raquel Wong: See response in Advisory Subcommittee on Bacteria.

**2) I recommend approval ___ / ___ disapproval to establish permit conditions for the importation of up to 1,500,000 In-Vitro coffee plants, (*Coffea spp.*) by permit, for propagation, by Kona Hills LLC.**

**Advisory Subcommittee on Bacteria:**

Dr. Tung Hoang: Response pending

Dr. Aaron Jacobs: Recommends Approval.

Dr. A. Christian Whelen: Response pending

Dr. Raquel Wong: Recommends Approval.

Comments: "No impact to animal health is seen with the importation of this commodity. Approval to establish permit conditions is in relation to my scope of expertise in veterinary medicine."

**Advisory Subcommittee on Entomology:**

Dr. Jesse Eiben: Recommends Approval.

> Comments: "I am concerned that no number of random samples of the 1.5 million plants, or frequency of testing via genetic techniques has been established. Virus infection inside the seeds used to grow the 1.5 million plants is possible (though unlikely), and I did not see information regarding virus species infecting coffee, or what molecular methods would be used for that test (or the frequency of testing as stated above). The protocols detailed for sterilization and growing are likely sufficient for eliminating coffee rust and other fungal pathogens during the import or quarantine phase, but please heed the advice of viral plant pathologists in this matter, as I am not a subject expert."

***PQB notes:*** *PQB and the applicant are in communication with Dr. Mike Melzer from the University of Hawaii to develop an appropriate sampling protocol.*

Dr. Peter Follett: Response pending

Dr. Frank Howarth: Response pending

Mr. Darcy Oishi: No Recommendation.

> Comments: "The following issues with the permitting conditions need to be resolved. However, please note I am not recommending approval/disapproval as per above.
>
> Condition 5. What diseases will be screened for? Who will pay for the cost of the diagnostic screening? What minimum percentage of plants shall be screened? 100%? 50%?
>
> Condition 12. The proposal on pg 8 and 9 of the submittal has no details of the structural features that are a key element of "quarantine" facilities. What are the required building and construction materials. What design features shall be required?
>
> Condition 15. What will these inspections be for? Presence of the restricted article? Presence of disease or symptoms?
>
> Condition 19. How will Federal import restrictions of propagative coffee be addressed?"

***PQB notes:*** *Condition number 5 is revised to include Coffee Ringspot Virus, which is known to occur in Costa Rica, as one of the diseases to be screened for, and to further include language to clarify that the applicant is responsible for the costs of the testing. Condition number 12, as worded, binds the applicant to conform to and maintain all quarantine facility design features as proposed in the submittal. A permit will not be*

*issued until the features are confirmed. Condition number 15 is revised to clarify that inspections will be for pests.*

Dr. Daniel Rubinoff: Response pending

Dr. Mark Wright: Recommends Approval.

**Advisory Subcommittee on Fungi:**

Dr. Stephen Ferreira: Response pending

Dr. Aaron Jacobs: See response in Advisory Subcommittee on Bacteria.

Dr. Mann Ko: Recommends Disapproval.

> Comments: "Permit conditions need to be modified as the issues (mentioned above) are clarified. However, as is, some of the permit conditions are vague and need to be more specific - Here are some of the examples:
>
> #4. Should the restricted articles be shipped to USDA APHIS PPQ Inspection Station first before the State PQ?
>
> #5. Specify the viruses, diseases to be certified free of. Does PQB have approved commercial labs or plant pathology labs in mind?
>
> #14. Place a requirement to account for the lost articles, e.g., lost by death, damage, theft etc.
>
> #15. Inspection of 100% of the plants or just by sampling? If sampling, specify the sampling protocols.
>
> #17. Notification should include the change in personnel/inspectors who may have different qualifications"

***PQB notes:*** *As to comment on condition number 4, Federal Inspection requirements are not normally stated in State Permit conditions. Condition number 5 is revised to include Coffee Ringspot Virus, which is known to occur in Costa Rica, as one of the diseases to be screened for. The applicant is also working with USDA-Agricultural Research Services, Hawaii Agricultural Research Center, and the University of Costa Rica to conduct the testing. Condition number 14 is revised to require the semi-annual report to include lost restricted articles. Condition number 12 binds the applicant to conform to and maintain all design features as proposed in the submittal. A permit will not be issued until the features are confirmed. Condition number 15: the applicant's procedure states there will be daily inspection of all plants. Condition number 17 is*

*revised to include notification to PQB of new personnel. Permit condition number 11 is revised to require an authorized personnel listing. PQB is working with the applicant and Dr. Mike Melzer from the University of Hawaii to develop an acceptable sampling protocol.*

Dr. Susan Schenck: Recommends Approval.

Dr. A. Christian Whelen: Response pending

Dr. George Wong: Recommends Approval.

> Comments: "Permit conditions seem very rigorous and seems to cover all possibilities of pest organisms escaping from the facilities, if any should exist."

**Advisory Subcommittee on Plants:**

Dr. H.C. Bittenbender: Response pending

Dr. Susan Schenck: See response in Advisory Subcommittee on Fungi.

Ms. Stephanie Whalen: Response pending

Dr. Steven Montgomery: Recommends Approval.

**Advisory Subcommittee on Viruses:**

Dr. John Hu: Recommends Approval.

Dr. Stephen Ferreira: Response pending

Dr. Hongwei Li: Recommends Approval.

Dr. Aaron Jacobs: See response in Advisory Subcommittee on Bacteria.

Dr. Michael Shintaku: Recommends Approval.

Dr. A. Christian Whelen: Response pending

Dr. Raquel Wong: See response in Advisory Subcommittee on Bacteria.

**3) I recommend approval ___ / ___ disapproval to allow the exemption of 1,500,000 In-Vitro coffee plants (*Coffea spp.*) from Costa Rica, from standard quarantine and establishment of alternative pest management conditions for Kona Hills LLC.**

**Advisory Subcommittee on Bacteria:**

Dr. Tung Hoang: Response pending

Dr. Aaron Jacobs: Recommends Approval.

Comments: "Permit conditions appear to be satisfactory to minimize environmental risk, considering that plants will be propagated from sterile embryos. Perhaps consideration can also be given to also performing random testing for additional (non-viral) disease of coffee."

Dr. A. Christian Whelen: Response pending

Dr. Raquel Wong: Recommends Approval.

Comments: "No impact to animal health is seen with the importation of this commodity. Approval to allow exemption from standard quarantine is in relation to my scope of expertise in veterinary medicine."

**Advisory Subcommittee on Entomology:**

Dr. Jesse Eiben: Recommends Approval.

Comments: "The large quarantine facility will likely be sufficient for a self-contained private quarantine facility, again, as long as the rules established and outlined in this document are enforced and inspected as stated.

Honestly, with the low level of support for numbers of employees and training of Hawaii employees to inspect the process laid out in this application, this aspect of the entire application is the weakest. I hope that all aspects of the application are followed and inspected to prevent coffee diseases and pests from establishing."

***PQB notes:*** *PQB is working with the applicant to utilize off-island staff to conduct inspections throughout the quarantine period. Inspections by PQB staff will be conducted at a minimum, of once per week. Kona Hills will reimburse the state for off-island inspectors should the need arise.*

Dr. Peter Follett: Response pending

Dr. Frank Howarth: Response pending

Mr. Darcy Oishi: No Recommendation.

Comments: "See above. Submittal as is, is incomplete."

Dr. Daniel Rubinoff: Response pending

Dr. Mark Wright: Recommends Approval.

Comments: "It seems evident from the petition that the applicant and PQ have communicated extensively on the quarantine requirements, and that a strict quarantine process has been developed. It will of course be important to assure that the protocol is adhered to, and that intensive periodic monitoring is conducted on introduced material to intercept any potentially infected plant propagules. This is included in the exemption request."

**Advisory Subcommittee on Fungi:**

Dr. Stephen Ferreira: Response pending

Dr. Aaron Jacobs: See response in Advisory Subcommittee on Bacteria.

Dr. Mann Ko: Recommends Disapproval.

Comments: "Not considered because it's not clear whether Kona Hill is asking for a complete exemption of the quarantine or just in the reduction of the quarantine period. If the latter, the quarantine period to be reduced to is not clear, to 6 months?"

***PQB notes:*** *The applicant has amended the request on Page 3, section II, in the Project section to clarify a request for a 6-month reduction in the quarantine period.*

Dr. Susan Schenck: Recommends Approval.

Dr. A. Christian Whelen: Response pending

Dr. George Wong: Recommends Approval.

Comments: "Permit conditions seem very rigorous and seems to cover all possibilities of pest organisms escaping from the facilities, if any should exist their discovery, should make reduction in quarantine period safe."

**Advisory Subcommittee on Plants:**

Dr. H.C. Bittenbender: Response pending

Dr. Susan Schenck: See response in Advisory Subcommittee on Fungi.

Ms. Stephanie Whalen: Response pending

Dr. Steven Montgomery: Recommends Approval.

**Advisory Subcommittee on Viruses:**

Dr. John Hu: Recommends Disapproval.

Dr. Stephen Ferreira: Response pending

Dr. Hongwei Li: Recommends Disapproval.

> Comments: "The in vitro coffee plants are produced from the embryos of individual, mature coffee seeds, and they are not the clones generated by traditional tissue culture-based micropropagation. That leads to potential contamination of some coffee viruses."

***PQB notes:*** *PQB recognizes this issue and has required virus testing prior to arrival and throughout the quarantine period as stated in condition number 5. The applicant is aware that a shipment infested with a virus may result in the destruction of an entire shipment of plants.*

Dr. Aaron Jacobs: See response in Advisory Subcommittee on Bacteria.

Dr. Michael Shintaku: Recommends Approval.

> Comments: "1) A protocol for clean-up in case of broken vessels should be described. 2) A protocol for preparedness in case of a high-wind/hurricane event should be at least considered. The hoop houses as described may be seriously damaged."

***PQB notes:*** *PQB has relayed these comments to the Applicant. Applicant has provided a procedure which is included in the submittal on page 13. The applicant has also clarified construction to be able to withstand extreme weather events.*

Dr. A. Christian Whelen: Response pending

Dr. Raquel Wong: See response in Advisory Subcommittee on Bacteria.

## V. PQB Proposed Permit Conditions

1. The restricted article(s), up to 750,000 In Vitro coffee plants, (*Coffea spp.*), shall be used for propagation, a purpose approved by the Board of Agriculture (Board), and shall not be sold, given, transferred, or released in Hawaii, unless released from quarantine by the Plant Quarantine Branch (PQB) Chief, or as approved by the Board.

2. The permittee, Mr. Darwin Inman, Manager, Kona Hills Coffee, 81-964 Haleki'i Street, Kealakekua, Hawaii, 96750, shall be responsible and accountable for all the restricted article(s) imported from the time of its arrival to its final disposition.

3. The restricted article(s) shall be clearly labeled as "Live Plants" and "This Parcel May be Opened and Delayed for Agriculture Inspection."

4. The permittee shall provide at least a 10-day written notice of any shipment of the restricted article(s). The restricted article(s) shall be shipped in PQB approved sterile container(s) and media.

5. Random samples of the restricted article(s) of each shipment shall be certified free of major coffee virus diseases, including but not limited to Coffee Ringspot Virus, and free of virus-like symptoms by a PQB approved commercial laboratory or a PQB approved plant pathologist who has the means of conducting virus indexing using molecular techniques and is independent of the in-vitro production facility. The permittee shall be responsible for all costs incurred as a result of the testing.

6. Each shipment shall be accompanied with a phytosanitary certificate issued at the point of origin. A phytosanitary certificate is an official certificate signed by a plant quarantine official of the state or foreign country of origin indicating pest free conditions of the plants and disinfestation treatments the plants were subjected to.

7. Quarantine duration shall be no less than six months in a PQB approved quarantine facility. The restricted article(s) shall not be released from quarantine until approved by the PQB Chief.

8. Upon inspection, if it is determined that the restricted article(s) are infested with any insect, plant pathogen, or other organism harmful or potentially harmful to agriculture, or any other pest as defined by section 150A-2, HRS, the restricted article(s) may be subject to quarantine and PQB approved treatment, if applicable, at the discretion of the PQB chief. The restricted article(s) may also

be destroyed or sent out of the State at the permittee's expense if there is no appropriate treatment to eradicate the pest.

9. Each shipment shall be accompanied by a copy of the PQB permit for the restricted article(s) and an invoice, packing list or other PQB approved document listing the specific identity of the restricted article(s), the quantity of the restricted article(s), the shipper, and the permittee for the restricted article(s).

10. The restricted article(s) shall be quarantined at the Kona Hills Nursery and Farms-Hokukano Ranch Lot 1-A, 81-6580 Hawaii Belt Road, Kealakekua, Hawaii 96750, a site inspected and approved by the PQB prior to importation. Removal of the restricted article(s) to another quarantine site shall require Board approval and a site inspection by the PQB.

11. The restricted article(s) shall be maintained by the responsible person, Mr. Darwin Inman, Manager, Kona Hills Coffee, 81-964 Haleki'i Street, Kealakekua, Hawaii, 96750, or by trained or certified personnel designated by the responsible person. A list of the designated personnel shall be provided to the PQB.

12. The permittee shall adhere to the use, facility, equipment, procedures, and safeguards described in the permit application as approved by the Board.

13. The permittee shall have available a procedural or safety manual at the time of inspection which identifies the practices and procedures to minimize or eliminate risks of theft, pest outbreaks, or accidental release prior to release from quarantine.

14. The permittee shall maintain and submit in July and January, a semi-annual report of all the restricted article(s) imported under this permit for the following year after importation. The report shall include the permit number, scientific name of the restricted article(s), inventory of each restricted article(s), and the status of its use. Should the restricted article(s) status result in a final disposition (death, destruction, theft, etc.), this shall be included in the report. The permittee shall make the report available upon request by the PQB inspector.

15. The restricted article(s) shall be inspected daily for insects, diseases, or any other pests by the responsible person, or by trained or certified personnel designated by the responsible person. Records detailing each inspection shall be maintained throughout the duration of the quarantine period.

16. The approved site, restricted article(s) and records pertaining to the restricted article(s) under permit shall be subject to post-entry inspections by the PQB. The permittee shall make the site, restricted article(s), and records pertaining to the restricted article(s) available for inspection upon request by the PQB

inspector.

17. The permittee shall immediately notify the PQB chief in writing the following:

    a. Any theft, accidental release, or insect or disease outbreaks involving the restricted article(s) under this permit and any changes to the approved sites, facilities or containers used to contain the restricted article(s).

    b. For a shipment of the restricted article(s) that is delivered to the permittee without the PQB "Passed" stamp affixed to the article, container or delivery order indicating that the shipment has passed inspection and is allowed entry into the State.

    c. Any changes to the list of personnel designated to maintain the restricted article(s).

    d. The permittee will no longer import or keep the restricted article(s) authorized under this permit. In that event, the permit will be cancelled.

18. The permittee is responsible for all costs, charges, or expenses incident to the inspection or treatment of the regulated article(s) as provided in Act 173, Session Laws of Hawaii 2010, section 13, including, if applicable, charges for overtime wages, fixed charges for personnel services, and meals.

19. It is the responsibility of the permittee to comply with all applicable requirements of municipal, state, or federal law pertaining to the restricted article(s).

20. The permittee shall submit to the PQB chief a copy of all valid licenses, permits, certificates or other similar documents required by other agencies for the restricted article(s). The permittee shall immediately notify the PQB chief in writing when any of the required documents are suspended, revoked, or terminated. This permit issued by the PQB chief may be cancelled upon suspension, revocation, or termination of any license, permit, certificate or similar documents the permittee is required to have for the restricted article(s).

21. Any violation of the permit conditions may result in a citation or a cancellation of the permit, or both.

22. A cancelled permit is invalid and upon written notification from the PQB chief, all restricted article(s) listed on the permit shall not be imported. In the event of permit cancellation, any restricted article(s) imported may be moved, seized, treated, quarantined, or otherwise disposed of, at the discretion of the PQB chief. Any expense or loss in connection therewith shall be borne by the permittee.

23. The permittee shall agree in advance to defend and indemnify the State of

Hawaii, its officers, agents and employees for any and all claims against the State of Hawaii, its officers, agents, or employees that may arise from or be attributable to any of the restricted article(s) that are introduced under this permit. This permit condition shall not apply to a permittee that is a Federal or State of Hawaii entity or employee, provided that the State or Federal employee is a permittee in the employee's official capacity.

ADVISORY COMMITTEE REVIEW: May we request your recommendation and comments at the next meeting of the Advisory Committee on Plants and Animals.

*Coffea spp.* February 4, 2018
Kona Hills LLC, D. Inman

## VI. Advisory Subcommittee Review

**ADVISORY SUBCOMMITTEE REVIEW:** May we request your recommendation and comments by **Friday, February 9th, 2018.**
You may fax your response to me at (808) 832-0584 or e-mail to:
jonathan.k.ho@hawaii.gov.

1) I recommend approval ___ / ___ disapproval to Allow the Importation of up to 750,000 In-Vitro Coffee Plants, (*Coffea spp.*) by Permit, for Propagation, by Kona Hills LLC.

Comments: After reviewing this revised submittal, I am still unable to recommend approval or disapproval. I still view this as an incomplete application that does not have proper SOPs, design specification and plans for buildings for containment or permit conditions that adequately specify how Plant Quarantine will address by permit, the risk of introduction of coffee rust or other exotic diseases or insect pests.

Something that must be emphasized is the importation of a true coffee rust resistant stock means plants can be asymptomatic and visual detection of symptoms will be more difficult if not impossible. What training will PQ inspectors receive so they are properly informed what to look for? Will inspections be limited to PQ inspectors or will it also include plant pathologists, mycologists or other experts versed in the detection of coffee rust, related diseases or pests? While the applicant is taking additional mitigative steps, e.g. application of a fungicide, screening using molecular genetic tools is critical for the detection of coffee rusts. There are zero details in this submittal on how screening will work, the screening intervals or the total percentage of plants that will be screened prior to release into the environment. PQB Notes state "PQB is working with the applicant and Dr. Mike Melzer from the University of Hawaii to develop an acceptable sampling protocol." Acceptable to whom? PQB? The applicant? The advisory subcommittees? Will there be secondary review of the submittal? If so by whom? Will we have an ability to comment on the sampling protocol before the issuance of a permit?

Containment facility designs should be rigorous especially since this proposal involves containment of imported plants in the coffee belt. It appears the applicant intends to use essentially plastic wall construction which is not sufficient for rust containment. While PQB notes states a "permit will not be issued until the features are confirmed", it is unclear if PQB feels the "containment" features highlighted in the submittal are sufficient and PQB must confirm their existence or if more rigorous designs and construction are needed? Does PQB have existing design specifications for the applicant and subsequent reviewers to evaluate? If so what are they? Containment of rusts per USDA design specifications and the BMBLII require facilities with solid wall construction, impermeable to water with filtered air flowing in and out of the facility with air pressure flowing from least contaminated to most contaminated.

Addendum 1

2) I recommend approval ___ / _x__ disapproval to establish permit conditions for the importation of up to 750,000 In-Vitro coffee plants, (*Coffea spp.*) by permit, for propagation, by Kona Hills LLC.

Comments:
See above. Permit condition 12 states "the permittee shall adhere to the use, facility, equipment and procedures, and safeguards described in the permit application as approved by the Board." I am unclear who determines the facility and procedural safeguards? This importation is, ultimately, for release in the environment. The applicant lacks information on any of these safeguards and it appears PQB is unwilling or unable to provide the safeguards in a fashion where subject matter expert can review. While other SMEs have not expressed concerns on this importation, the sheer volume of imported coffee plants create risk. A single, viable fungal spore is all that is needed to establish coffee rust in Hawaii. For permit conditions to have rigor and serve to adequately protect agriculture and the environment, it should be made clear what position PQB is taking, what procedures to safeguard and contain any threats to the environment PQB is requiring versus how the applicants' perception of need (which is in turn dependent upon the applicant's interpretation of risk).

3) I recommend approval ___ / _ __ disapproval to allow the exemption of 750,000 In-Vitro coffee plants (*Coffea spp.*) from Costa Rica, from standard quarantine and establishment of alternative pest management conditions for Kona Hills LLC.

Comments:
See above. Application is incomplete.

Signature: Darcy E. Oishi Date: 2/09/2018

Print Name: Darcy Oishi