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May 12, 2023

TO: Advisory Committee on Plants and Animals

FROM: Michael Wong, DVM
Interim University Veterinarian
University of Hawaii, Animal & Veterinary Services

THROUGH: Noni Putnam
Land Vertebrate Specialist
Plant Quarantine Branch

SUBJECT: Request to: (1) Allow the Importation of Guinea Pigs, *Cavia cobaya* (*Cavia porcellus*), Domesticated Mice, *Mus musculus*, and Domesticated Rats, *Rattus* species, Animals on the List of Conditionally Approved Animals, by Permit, for Research, by the University of Hawaii Animal & Veterinary Services; and (2) Update Permit Conditions for the Importation of Guinea Pigs, *Cavia cobaya* (*Cavia porcellus*), Domesticated Mice, *Mus musculus*, and Domesticated Rats, *Rattus* species, Animals on the List of Conditionally Approved Animals, by Permit, for Research, by the University of Hawaii Animal & Veterinary Services.

I. Summary Description of the Request

PQB NOTES: *The Plant Quarantine Branch (PQB) submittal for requests for import or possession permits, as revised, distinguishes 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 page 19 of the submittal was taken directly from the University of Hawaii Animal & Veterinary Services application and subsequent written communications provided by the applicant, Dr. Michael Wong. For instance, the statements on 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*

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portion of the submittal prepared by PQB, including the Advisory Subcommittee Review and Proposed Import Conditions are identified as Sections III and IV of the submittal, which starts at pages 19 and 21, respectively.

We have a request to review the following:

COMMODITY: Various mice, domesticated, *Mus musculus*
Various rats, domesticated, *Rattus norvegicus*
Various guinea pigs, *Cavia porcellus*
(Refer to Appendix A for Permit Application).

SHIPPERS: Various USA and Foreign shippers, with various addresses. Typically, the following commercial vendors:

1. Charles River Laboratories (Headquarters)
251 Ballardvale Street
Wilmington, MA 01887
url: https://www.criver.com/products-services/research-models-services/animal-model-evaluation-program?gclid=EAlalQobChMIpKy8_aG78QIVAx6tBh2cVg5CEAAYASAAEgJ_PD_BwE®ion=3611
2. Jackson (JAX) Laboratory
600 Main Street
Bar Harbor, ME 04609
url: <https://www.jax.org/jax-mice-and-services>
3. Taconic Biosciences (Headquarters)
1 Discovery Drive, Suite 304
Rensselaer, NY 12144
url: <https://www.taconic.com>
4. Occasional inter-institutional shipments between UH and various other academic institutions around the world (for mice and rat shipments only)

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IMPORTER: Michael Wong, DVM
University of Hawaii Animal & Veterinary Services
1960 East West Road, Biomedical Sciences Building T210
Honolulu, HI 96822.
Phone No.: (808) 956-4444. Fax No.: (808) 956-8528
(Refer to Appendix B for resume).

PQB NOTES: *The PQB has previously approved Import Permits for Dr. Sylvia Kondo, University of Hawaii Animal & Veterinary Services, on October 26, 2022 and years prior to import Conditionally Approved Mammals. (Refer to Attachment 1).*

CATEGORY: Guinea Pigs, *Cavia cobaya* (*Cavia porcellus*), Domesticated Mice, *Mus musculus*, and Domesticated Rats, *Rattus species*, are on the List of Conditionally Approved Animals. Pursuant to Hawaii Administrative Rules (HAR), Chapter 4-71, Conditionally Approved Animals may be imported into Hawaii for individual possession, businesses, or institutions. (Refer to Attachment 2 for the species proposed for import).

PQB NOTES: *The University of Hawaii Animal & Veterinary Services elected not to include chinchillas in this request. Dr. Michael Wong was informed that in the event that they decided to import chinchillas at a later date, they would be required to go through the review process again.*

II. Information Provided by the Applicant in Support of the Application

PROJECT: Animal and Veterinary Services (AVS) supports the animal biomedical and neurobehavioral research done at the University of Hawaii (UH). The majority of the animals which AVS imports are domesticated mice and a few rats from commercial vendors on the mainland. AVS sometimes coordinates rodent exports and imports between the UH and non-commercial vendors, such as other academic institutions. All shipments are accompanied by health monitoring records from the source to ensure that certain rodent pathogens are excluded before we accept shipment. The animals are used as models for various studies including, but not limited to, cancer, disease, vaccine development, diagnostic testing, metabolic conditions, reproductive biology, behavior, teaching, and understanding basic pathophysiology.

OBJECTIVE: AVS has supported various experimental studies throughout the years, which are done by various Principal Investigators (PI) mostly from the

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University of Hawaii and a few private biotechnology companies based in Hawaii. The mouse is an excellent model for studying human conditions. Rats also make good models, but are more cost prohibitive because of their larger size. Occasionally guinea pigs are used as models, and rarely a PI may request to use rabbits. All of these species are ordered from commercial vendors, except for a few mice and rats from collaborating institutions, who provide health monitoring records for their colonies. The animals are used as models to understand the pathophysiology of human conditions and to develop diagnostics, preventative measures and/or treatments. Common procedures done on them include, but are not limited to, injections, venipuncture, imaging, surgery, special diets, administration of substances, behavior tests, and analysis of harvested tissues. Typically, studies run for 8-12 weeks. Sometimes they are repeated a few times to validate the results. For aging studies, the mice may be maintained for up to two years.

PQB NOTES: Pursuant to Chapter 4-71, HAR, domestic races of the European rabbit, *Oryctolagus cuniculus*, are not considered non-domestic animals. Therefore, they are not covered under PQB's permitting requirements. However, they are regulated by the Hawaii Department of Agriculture, Animal Industry Division.

PROCEDURE: Studies typically last between 8-12 weeks. Rarely, a few studies may last up to the lifetime of the mouse. E.g. aging studies.

Injections: either subcutaneous, intra-peritoneal, intravenous, intramuscular, intradermal, foot pad, and rarely intracranial. Typically 1 to 3 times during a study. Rarely at more frequent intervals.

Administration of substances: gavage, typically once. injections.

Typically 1 to 3 times during a study. Many times substances are administered in the bottled water or in the food given to the rodents.

Venipuncture: tail vein, submandibular, retro-orbital, femoral, jugular, intracardiac as a terminal procedure, under anesthesia. Typically 1 to 3 times during a study.

Imaging: In Vivo Imaging System (IVIS), echocardiogram. IVIS is often done to track the progress of the tumor during cancer studies. Typically, weekly tracking of the progress of a condition.

Surgery: done aseptically under anesthesia by trained individuals. One time. Analgesics are provided to improve wellbeing of the animal.

Special Diets: substances added to the drinking water, or special diets created by the food manufacturer. Typically fed for 2 to 12 weeks.

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Behavior tests: mazes, open field test, memory tests. Typically 1 to 3 times during a study.

Analysis of harvested tissue: Following humane euthanasia, tissue is often collected and analyzed by histology or other means depending upon the goal of the study. E.g. analyzing Ribonucleic Acid or Deoxyribonucleic Acid extracted from the tissue.

DISCUSSION:

- 1. Person Responsible:** Michael Wong, DVM
University of Hawaii Animal & Veterinary Services
1960 East West Road, Biomedical Sciences Building T210
Honolulu, HI 96822.
Phone No.: (808) 956-4444. Fax No.: (808) 956-8528
Email Address: wongmich@hawaii.edu

- 2. Safeguard Facility and Practices:**

Manoa Vivarium (includes the Biomedical Sciences Building Tower (Biomed Tower) and the Institute for Biogenesis Research which sits in the footprint of the Biomed Tower)
1960 East West Road
Biomedical Sciences Building T210
Honolulu, HI 96822

(Refer to Attachment 3 for map and directions to the facility and pictures of the facility). Manoa Stream is the nearest body of water, 825 feet away. All effluent from the facility is drained into the City & County sewer system. All effluent meets the City and County of Honolulu requirements for wastewater discharge. AVS receives guidance from the UH Environmental Health and Safety Office (EHSO) on proper waste water discharge.

Kakaako Vivarium
651 Ilalo Street
Biosciences Building 122
Honolulu, HI 96813

(Refer to Attachment 4 for map and directions to the facility and pictures of facility). The Pacific Ocean is the nearest body of water, 1,300 feet away. The facility is protected by a large berm from natural disasters such as tsunamis. All effluent from the facility is drained into the City & County sewer system. All effluent

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meets the City and County of Honolulu requirements for waste water discharge. AVS receives guidance from the UH Environmental Health and Safety Office (EHSO) on proper waste water discharge.

Containment of animals at both vivariums:

Rats, mice, and guinea pigs are kept in Tecniplast® Individually Ventilated Cage rack systems circulating ambient air that is pre-filtered and HEPA filtered (Refer to Attachment 5). The majority of the animals are housed under Animal Biosafety 1 or 2 conditions. The few mice cages housed in the Animal Biosafety Level 3 are hermetically sealed in Isocages and supply and exhaust air is HEPA filtered under negative pressure (Refer to Attachment 6). In addition, there is a HEPA filter at the top of each Isocage. All biological or chemical hazard work is done under a certified biological safety cabinet (BSC) rated for the hazard. All Tecniplast cages have a wire top and a filtered hard plastic bonnet covering the cage. Rabbits are housed in stainless steel cage racks (6 cages to a rack) (Refer to Attachment 7).

Biosecurity:

Manoa Vivarium: Institute For Biogenesis Research (IBR): The perimeter is protected by key fobs (or lock and key if fob is out of service) and the interior hallway to the IBR vivarium is secured with Eplex card swipe locks. (Refer to Attachment 8).

Biomed Tower: The entry to the Biomed Tower vivarium and the animal rooms is secured with Eplex punch code locks. (Refer to Attachment 8). Other floors in the Manoa vivarium which are used for ancillary functions, such as storage, are secured with keyed locks. UH Public Safety security guards patrol the campus and secure the buildings after hours.

Kakaako vivarium is patrolled by security guards dedicated to the Kakaako campus 24/7. The entry to the Biosciences building where the vivarium is housed, as well as the main entrance to the vivarium is secured with a Schlage® swipe key card. In addition, the entry into the vivarium uses a biometric security system with key card access. Entry into the vivarium proper and each of the animal and procedure rooms is secured by the Edstrom/Avidity Watchdog EX® key punch locks. (Refer to Attachment 8). The Watchdog records who goes into the rooms at any given time. Security cameras also monitor critical entry points into the building and the vivarium. The Animal Biosafety Level 3 (ABSL3), which sits in the footprint of the Kakaako vivarium is secured with both a biometric fingerprint lock with key card access to get into the ABSL3 and Watchdog EX key punch locks to get into individual animal rooms. (Refer to Attachment 8). Visitors check in at the

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security desk in the main lobby of the Biosciences Building and are escorted into the vivarium by those who have been preapproved by AVS. Cameras situated at entry points into the Kakaako vivarium are deterrents to vandalism and illegal entry. The Watchdog EX® system at Kakaako also records the unique identification of who is in the rooms at any given time, so we may track access whenever an incident occurs. The number of doors to the outside are also a deterrent for escape. E.g. There are at least 6 doors between the building entrance and the ABSL3 entrance.

Both vivariums follow strict Standard Operating Procedures (SOP) used for entry into the vivariums. (Refer to Attachment 9). Individuals requiring access to the vivariums undergo rigorous training to do so. SOPs include, but are not limited to, procedures to follow in the event that a mouse escapes from its cage. (Refer to Attachment 10). Live traps are set up at critical points in the vivarium. Incidents are to be reported to the UH Animal Welfare and Biosafety Program. (Refer to Attachments 11a and 11b for the Emergency Response Plans for Manoa and Kakaako vivariums, respectively).

The best example demonstrating successful biosecurity facilities, practices and/or procedures, is that during this author's tenure, since 1993, there has been a track record of no escaped animals from the vivariums.

3. Method of Disposition:

Specific organisms used by the Principal Investigator's research group are under the permit conditions set forth by the regulatory bodies such as the Hawaii State Department of Agriculture. AVS is only responsible for caring for the animals used in the vivariums. Animals imported are from colonies of known pathogen status, hence the animals are bred to be specific pathogen free, much cleaner than the typical pet store bought animal. There is a written chain of custody from entry to disposition of all animals used in the vivariums. All animals are disposed in accordance with applicable federal, state, and City and Country regulations. Carcasses are frozen after death and are disposed of through an alkaline hydrolysis tissue digester which sits inside the Kakaako vivarium. It renders the remains to soap and a few bits of dried bones after carcasses sit in a pressure vessel at very high temperatures in a bath of sodium and potassium hydroxide for several hours. The effluent from the tissue digester meets the requirements of the City and County of Honolulu Industrial Wastewater Discharge permit. Any carcasses from the ABSL3 are also brought directly from the ABSL3 freezer in biohazard bags to the tissue digester in a liquid resistant, durable solid container with a tight fitting lid. Any time an animal cage is opened, staff wear nitrile gloves, dedicated uniforms and shoes. Depending upon the level of hazard, they may

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wear additional PPE and/or use additional engineering controls, based on requirements of the SOPs for working with the particular hazard.

PQB NOTES: All forthcoming references provided by the applicant can be found on page 18 and 19 of the submittal.

4. Abstract of Organisms:

Unless otherwise noted, information is taken from *Laboratory Animal Medicine, 3rd edition*, editors Fox, Anderson, Otto, Pritchett-Corning, and Whary, American College of Laboratory Animal Medicine Series, Academic Press (Refer to Reference Number 1).

- a. Organism's available levels of classification including scientific name. If common names are known then they should also be included.

Various mice, domesticated, *Mus musculus*
Various rats, domesticated, *Rattus norvegicus*
Various guinea pigs, *Cavia pocellus*
Various rabbits, domesticated, *Oryctolahus cuniculus*

- b. Organism's life history (e.g., biology, reproductive habits, temperature requirements, natural habitat, growth rate, biotic potential, size at maturity, dispersal capabilities, longevity, etc.)

Various mice domesticated, *Mus musculus*
Adult weight of males 20-40 g, females 18-35 g. Usual life span (longevity) is 1-3 years. Males reach puberty at 28-49 days, and females at 28-49 days. There is no breeding season, gestation is 19-21 days, litter size is 4-12 pups, weaning age is 21 days. Mice consume about 3-5 g of food a day. Their thermoneutral zone is about 29.6-30.5° C (85-86° F) (Refer to page 36 of Reference Number 2). Per Festing and Greenwood, 1976 lab mice can run in a running wheel up to 16 km in a 24 hour period. Their biotic potential is strain specific assuming an average litter of 6 pups born every month totals 72 pups per year per breeding pair. Assuming a breeding life span of two years totals 144 pups born to one female in her life time. They are nocturnal.

Various rats, domesticated, *Rattus norvegicus*
Adult weight of males 300-500 g, females 250-300 g. Usual life span (longevity) is 2.5-3 years. Males and females reach puberty at 50 +/- 10 days. There is no breeding season, gestation is 21-23 days, litter size is 8-

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14 pups, weaning age is 21 days. Rats consume about 5 g of food/100 g body weight per day. The optimum temperature for housing rats is 72–76 degrees F. Per Richter, 1927 the rat can run in a running wheel up to 43 km in a 24 hour period (Refer to Reference Number 3). Their biotic potential is strain specific assuming an average litter of 10 pups born every month totals 120 pups per year per breeding pair. Assuming a breeding life span of two years totals 240 pups born to one female in her life time. They are nocturnal.

Various guinea pigs, *Cavia pocellus*

Adult weight of males 900-1000 g, females 700-900 g. Usual life span (longevity) is 3-4 years. Males reach puberty at 3-4 months, and females at 2-3 months. They are spontaneous ovulators and under laboratory conditions are polyestrous breeders, gestation is 59-72 days, litter size is 2-5, weaning age is 14-28 days. Guinea Pigs consume about 6 gm/100 gm body weight/day of food. Their thermoneutral zone is about 2-31° C (35.6-87.8° F) (Refer to page 153 of Reference Number 2). Their biotic potential is 4-5 litters during a breeding life span of 18 months to 4 years, average 5 pups per year, assume 15 pups born to one female in her life time. Dispersal capabilities assume 5 pups per litter 4 litters per year for a total of 80 pups over their average life time of 4 years.

Various rabbits, domesticated, *Oryctolagus cuniculus*

Adult weight of rabbits 2-5 kg. Usual life span (longevity) is 5-7 years. Female New Zealand White rabbits reach maturity at 5 months of age and the males at 6-7 months. They are induced ovulators, gestation is 30-32 days, litter size is 7-9, weaning age is 5-8 weeks. Food consumption in rabbits varies by breed, age, and stage of growth and reproductive state. Their thermoneutral zone is about 2-31° C (35.6-87.8° F). Their biotic potential is 4-11 litters per year, during a breeding life span of 1 to 3 years, breed influences the average litter size. New Zealand White rabbits can average 8-10 kits per litter. Dispersal capabilities Assume 4 litters per year of 10 kits/litter totals 120 kits over an average life time of 3 years.

- c. What are the habitats (e.g., wet forest, ocean reef, etc.) and niche requirements?

Various mice domesticated, *Mus musculus* For mice housed at AVS, they live in individually ventilated cage (IVC) rack systems in a climate controlled facility (temperature 72 +/- 2 degrees F, relative humidity 70% +/- 10%), and are fed commercial rodent chow and water ad libitum. For mice in general, the thermoneutral zone for most strains is 85 – 87 degrees

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F (but this does not equate with comfort or physiological economy). Are mainly nocturnal. Wild stains of mice can live in forests, grasslands, and manmade structures. They typically burrow underground to help protect them from predators (Refer to Reference Number 5).

Various rats, domesticated, *Rattus norvegicus*. For rats housed at AVS, they live in IVC rack systems in a climate controlled facility (temperature 72 +/- 2 degrees F, relative humidity 70% +/- 10%), and are fed commercial rodent chow and water ad libitum. Wild stains of rats can live in forests, grassland, and manmade structures. Their range extends from sea level to high mountain elevations. In the lab they prefer temperatures of 70 to 76 degrees F (Refer to Reference Number 6).

Various guinea pigs, *Cavia pocellus*. For guinea pigs housed at AVS, they live in IVC rack systems in a climate controlled facility (temperature 72 +/- 2 degrees F, relative humidity 70% +/- 10%), and are fed commercial guinea pig chow, supplemented with fruits and vegetables, and water ad libitum. The wild guinea pigs' natural habitat is the mountains of South America in tough climates. They live in small family groups of three to ten. They spend most of their day looking for food together, covering great distances and always following the same path (Refer to Reference Number 7).

Various rabbits, domesticated, *Oryctolahus cuniculus* – For rabbits housed at AVS, they live in stainless steel rack systems in a climate controlled facility (temperature 72 +/- 2 degrees F, relative humidity 70% +/- 10%), and are fed commercial rabbit chow and water ad libitum. They prefer cooler temperatures between 61 and 72 degrees F. Wild breeds of rabbits can be found in woods, forests, meadows, grasslands, deserts, tundra, and wet lands. Because they are prey to carnivores, they seek hiding places like burrows as a primary haven. Rabbits are gregarious, burrowing, herbivorous, nocturnal (or diurnal depending on the environmental circumstances) (Refer to Reference Number 8).

- d. What is the native range of the organism? Is it naturalized in Hawaii?

Various mice domesticated, *Mus musculus*. Wild mice occur worldwide, are native to Eurasia and Africa, where they range from lowlands to mountaintops (Refer to page 58 of Reference Number 4 and Reference Number 5). The domesticated mouse is used for research or kept as pets, but are not naturalized in Hawaii, and probably will not do well in the wild due to the degree of their domestication.

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Various rats, domesticated, *Rattus norvegicus*. Wild rats occur worldwide (Refer to page 65-66 of Reference Number 4 and Reference Number 6). The domesticated rat is used for research or kept as pets, but are not naturalized in Hawaii, and probably will not do well in the wild due to the degree of their domestication.

Various guinea pigs, *Cavia pocellus*. Wild guinea pigs are found across the South American continent, in open areas ranging from moist savannas to thorn forest and scrub desert (Refer to page 30 of Reference Number 4 and Reference Number 7). They live in a range from low elevations up to 16,000 feet. The domesticated guinea pig is used for research or kept as pets, but are not naturalized in Hawaii, and probably will not do well in the wild due to the degree of their domestication.

Various rabbits, domesticated, *Oryctolahus cuniculus*. More than half the world's wild rabbit population resides in North America and are also native to southwestern Europe (Refer to page 13 of Reference Number 4 and Reference Number 8). The domesticated rabbit is used for research, hobbists, or kept as pets, but are not naturalized in Hawaii, and probably will not do well in the wild due to the degree of their domestication.

- e. Does the organism have the potential to become established in Hawaii? If so, likelihood to become invasive or injurious?

Various mice domesticated, *Mus musculus*. No. These have been purposefully bred for research under stringent laboratory conditions and highly domesticated. Therefore, unlikely to successfully compete with the wild populations nor establish themselves in Hawaii. Therefore, unlikely to become invasive or injurious.

Various rats, domesticated, *Rattus norvegicus*. No. These have been purposefully bred for research under stringent laboratory conditions and highly domesticated. Therefore, unlikely to successfully compete with the native populations nor establish themselves in Hawaii. Therefore, unlikely to become invasive or injurious.

Various guinea pigs, *Cavia pocellus*. No. These have been purposefully bred for research under stringent laboratory conditions and highly domesticated. Therefore, unlikely to successfully establish themselves in Hawaii. Therefore, unlikely to become invasive or injurious.

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Various rabbits, domesticated, *Oryctolagus cuniculus*. No. These have been purposefully bred for research under stringent laboratory conditions and highly domesticated. Therefore, unlikely to successfully establish themselves in Hawaii. Therefore, unlikely to become invasive or injurious.

- f. Has the species established viable populations beyond its native range? If so, is the organism a pest or considered invasive?

Various mice domesticated, *Mus musculus*. No. Purposefully bred mice have not been able to establish viable populations beyond the laboratory setting. Due to their high degree of domestication, they are unlikely to successfully compete with the wild populations and therefore unable to establish viable populations.

Various rats, domesticated, *Rattus norvegicus*. No. Purposefully bred rats have not been able to establish viable populations beyond the laboratory setting. Due to their high degree of domestication, they are unlikely to successfully compete with the native populations and therefore unable to establish viable populations.

Various guinea pigs, *Cavia pocellus* No. Purposefully bred guinea pigs have not been able to establish viable populations beyond the laboratory setting due to their high degree of domestication.

Various rabbits, domesticated, *Oryctolagus cuniculus* No. Purposefully bred rabbits have not been able to establish viable populations beyond the laboratory setting due to their high degree of domestication.

- g. What is the host range and what does it feed on? Are hosts and alternate hosts present in Hawaii and how abundant or widely is it distributed?

Various mice domesticated, *Mus musculus*. N/A. Due to their high degree of domestication, lab mice do not inherently infect nor prey on other species. The lab mice in the vivarium are fed commercial rodent chow.

Various rats, domesticated, *Rattus norvegicus* N/A. Due to their high degree of domestication, lab rats do not inherently infect nor prey on other species, unlike their wild counterparts. The lab rats in the vivarium are fed commercial rodent chow.

Various guinea pigs, *Cavia pocellus* N/A. Due to their high degree of domestication, lab guinea pigs do not inherently infect nor prey on other

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species. The lab guinea pigs in the vivarium are fed commercial guinea pig chow supplemented with fruits and vegetable.

Various rabbits, domesticated, *Oryctolagus cuniculus* N/A. Due to their high degree of domestication, lab rabbits do not inherently infect nor prey on other species. The lab rabbits in the vivarium are fed commercial rabbit chow supplemented with fruits and vegetable.

- h. Is the species highly domesticated, cultivated or cultured for commercial purposes?

Various mice domesticated, *Mus musculus*. Yes, the lab mouse is highly domesticated and purposefully bred for research. As such they have been raised under stringent conditions to exclude numerous pathogens that normally affect the wild populations. Individuals entering the vivariums must don additional AVS required uniforms/lab coats/shoe covers over their street clothing to prevent inadvertently introducing mouse pathogens from the outside.

Various rats, domesticated, *Rattus norvegicus* Yes, the lab rat is highly domesticated and purposefully bred for research. As such they have been raised under stringent conditions to exclude numerous pathogens that normally affect the wild populations. Individuals entering the vivariums must don additional AVS required coverings over their street clothing to prevent inadvertently introducing rat pathogens from the outside.

Various guinea pigs, *Cavia pocellus* Yes, the lab guinea pig is highly domesticated and purposefully bred for research. As such they have been raised under stringent conditions to exclude numerous pathogens that normally affect the pet-owned populations. Individuals entering the vivariums must don additional AVS required coverings over their street clothing to prevent inadvertently introducing pathogens from the outside.

Various rabbits, domesticated, *Oryctolagus cuniculus*. Yes, the lab rabbit is highly domesticated and purposefully bred for research. As such they have been raised under stringent conditions to exclude numerous pathogens that normally affect pet-owned populations. Individuals entering the vivariums must don additional AVS required coverings over their street clothing to prevent inadvertently introducing pathogens from the outside.

- i. In its native range, are there impacts to wild stocks, commercial species, aquaculture, aquarium and/or ornamental species, etc.?

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Various mice domesticated, *Mus musculus* No. There is no impact as the domesticated lab mouse is unlikely to successfully compete and survive in the wild.

Various rats, domesticated, *Rattus norvegicus* No. There is no impact as the domesticated lab rat is unlikely to successfully compete and survive in the wild.

Various guinea pigs, *Cavia pocellus*. No. There is no impact as the domesticated lab guinea pig is unlikely to successfully compete and survive in the wild.

Various rabbits, domesticated, *Oryctolagus cuniculus*. No. There is no impact as the domesticated lab rabbit is unlikely to successfully compete and survive in the wild.

j. List diseases or other pests associated with the organism.

Various mice domesticated, *Mus musculus*. N/A. These purposefully bred lab mice are maintained under stringent conditions to exclude most mouse diseases that affect wild or pet populations. The commercial vendors exclude mouse diseases in the stocks they supply. Any mice transferred from other institutions are quarantined by AVS and Polymerase Chain Reaction (PCR) tested to ensure their clean health status. AVS lab sentinel mice and/or PCR testing is done every 3 months to survey for any mouse diseases that might affect the resident colonies in the vivarium. The vivariums have been specific pathogen free for at least a decade or more.

Various rats, domesticated, *Rattus norvegicus* N/A. These purposefully bred lab rats are maintained under stringent conditions to exclude most rat diseases that affect wild or pet populations. The commercial vendors exclude rat diseases in the stocks they supply. Any rats transferred from other institutions are quarantined by AVS and PCR tested to ensure their clean health status. AVS lab sentinel rats and PCR testing is done every 3 months to survey for any rat diseases that might affect the resident colonies in the vivarium.

Various guinea pigs, *Cavia pocellus*. N/A. These purposefully bred lab guinea pigs are maintained under stringent conditions to exclude most guinea pig diseases that affect wild or pet populations. The commercial vendors exclude guinea pig diseases in the stocks they supply.

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Various rabbits, domesticated, *Oryctolagus cuniculus*. N/A. These purposefully bred lab rabbits are maintained under stringent conditions to exclude most rabbit diseases that affect wild or pet populations. The commercial vendors exclude rabbit diseases in the stocks they supply.

- k. Does the organism have potential to be toxic and/or pathogenic?

Various mice domesticated, *Mus musculus*. No. There is no potential for the lab mice to be inherently toxic and/or pathogenic.

Various rats, domesticated, *Rattus norvegicus*. No. There is no potential for the lab rats to be inherently toxic and/or pathogenic.

Various guinea pigs, *Cavia pocellus*. No. There is no potential for the lab guinea pigs to be inherently toxic and/or pathogenic.

Various rabbits, domesticated, *Oryctolagus cuniculus*. No. There is no potential for the lab rabbits to be inherently toxic and/or pathogenic.

5. Effects on the Environment:

- a. Assess the probability of establishment and/or spread of the requested organism, associated diseases and/or pests.

Various mice domesticated, *Mus musculus*. Improbable, due to the redundancy of physical barriers in place in the vivariums to prevent escape to the outside (Refer to Section Number 2, Safeguard Facility and Practices on page number 5 of the submittal). Also, due to the highly domesticated nature of the lab mouse, they are unlikely to establish themselves in the wild. Finally, they do not inherently carry diseases that would be a threat to the wild populations (Refer to Section Number 4, letter j, Abstract of Organisms on page number 14 of the submittal).

Various rats, domesticated, *Rattus norvegicus*. Improbable, due to the redundancy of physical barriers in place in the vivariums to prevent escape to the outside (Refer to #2. Safeguard Facility and Practices above). Also, due to the highly domesticated nature of the lab rats, they are unlikely to establish themselves in the wild. Finally, they do not inherently carry diseases that would be a threat to the wild populations (Refer to Section Number 4, letter j, Abstract of Organisms on page number 14 of the submittal).

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Various guinea pigs, *Cavia pocellus*. Improbable, due to the redundancy of physical barriers in place in the vivariums to prevent escape to the outside (Refer to Section Number 2, Safeguard Facility and Practices on page number 5 of the submittal). Also, due to the highly domesticated nature of the guinea pigs, they are unlikely to establish themselves in the wild. Finally, they do not inherently carry diseases that would be a threat to the pet-owned populations (Refer to Section Number 4, letter j, Abstract of Organisms on page number 14 of the submittal).

Various rabbits, domesticated, *Oryctolagus cuniculus*. Improbable, due to the redundancy of physical barriers in place in the vivariums to prevent escape to the outside (Refer to Section Number 2, Safeguard Facility and Practices on page number 5 of the submittal). Also, due to the highly domesticated nature of the rabbits, they are unlikely to establish themselves in the wild. Finally, they do not inherently carry diseases that would be a threat to the pet-owned populations (Refer to Section Number 4, letter j, Abstract of Organisms on page number 14 of the submittal).

- b. Assess the potential economic and environmental consequences of importing this organism into Hawaii. What are the potential impacts to native and endemic species, agriculture industries, natural resources, the economy, and human and animal health and safety.

Various mice, domesticated, *Mus musculus*

Various rats, domesticated, *Rattus norvegicus*

Various guinea pigs, *Cavia pocellus*

Various rabbits, domesticated, *Oryctolagus cuniculus*

The four species listed above will have no negative impact on the economy and environment. Rather, they may positively impact both human and animal health and safety by providing beneficial information from the research done on research models. They are necessary for some grants and contracts that require research models for their studies. Grants and contracts not only provide valuable scientific information that may benefit humans and animals, but also the funding associated with them contributes to the economy.

- c. **Biosecurity**. Describe the equipment, practices and procedures that will be used to minimize escape, theft or release of the organism or associated diseases and/or pests, that are specific to your facility. Describe the security features of the facility that minimize theft, vandalism or damage from natural elements (wind/rain etc.). Provide any examples, such as

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previous projects, that demonstrate the biosecurity of the facility, practices and/or procedures.

At the facility, room, and cage level, the vivariums are secured to prevent inadvertent escape of the species (Refer to Section Number 2, Safeguard Facility and Practices on page number 5 of the submittal).

Manoa Vivarium: IBR: The perimeter is protected by key fobs and the interior hallway to the IBR vivarium (IBR) is secured with swipe key cards.

Biomed Tower: The entry to the Biomed Tower vivarium and the animal rooms are secured with ePlex punch code locks. Other floors in the Manoa vivarium which are used for ancillary functions such as storage are secured with keyed locks. UH Public Safety security guards patrol the campus and secure the buildings after hours.

Kakaako vivarium is patrolled by security guards dedicated to the Kakaako campus 24/7. The entry to the Biosciences building where the vivarium is housed, as well as the main entrance to the vivarium is secured with a Schlage® swipe key card (Refer to Attachment 8). In addition, the entry into the vivarium uses a biometric security system. Entry into the vivarium proper and each of the animal and procedure rooms is secured by the Edstrom/Avidity Watchdog EX® key punch locks. The Watchdog records who goes into the rooms at any given time. Security cameras also monitor critical entry points into the building and the vivarium. The ABSL3, which sits in the footprint of the Kakaako vivarium is secured with both a biometric fingerprint lock to get into the ABSL3 and Watchdog EX key punch locks to get into individual animal rooms. Visitors check in at the security desk in the main lobby of the Biosciences Building and are escorted into the vivarium by those who have been preapproved by AVS. Cameras situated at entry points into the Kakaako vivarium are deterrents to vandalism and illegal entry. The Watchdog EX system at Kakaako also records the unique identification of who is in the rooms at any given time, so we may track access whenever an incident occurs. The number of doors to the outside are also a deterrent for escape. E.g. There are at least 6 doors between the building entrance and the ABSL3 entrance.

Both vivariums follow strict Standard Operating Procedures (SOP) are used for entry into the vivariums (Refer to Attachment 9). Individuals requiring access to the vivariums undergo rigorous training to do so. SOPs include, but are not limited to, procedures to follow in the event that a mouse escapes from its cage (Refer to Attachment 10). Live traps are set up at

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critical points in the vivarium. Incidents are to be reported to the UH Animal Welfare and Biosafety Program. (Refer to Attachments 11a and 11b for the Emergency Response Plans for Manoa and Kakaako vivariums, respectively.

The best example demonstrating successful biosecurity facilities, practices and/or procedures, is that during this author's tenure, since 1993, there has been a track record of no escaped animals from the vivariums.

6. Alternatives: (What are the alternatives for this project? Please explain.)

There are no alternatives for this project. In many contracts and grants, an animal model is required as a critical part of the study. In Hawaii, there is only AVS and Tripler Army Medical Center (TAMC) that supports research using vertebrate animals. Access to TAMC is restricted to the military and their collaborators. AVS (formerly Laboratory Animal Service) has imported lab animals into the State of Hawaii for many decades in support of biomedical and neurobehavioral research and teaching. Over the decades, we have a proven track record of being responsible custodians of the animals under our jurisdiction and conforming with the conditions set forth in the HDOA import permits.

7. References:

- (1) American College of Laboratory Animal Medicine Series. 2015. *Laboratory Animal Medicine*, 3rd ed. London, San Diego, CA, Cambridge, MA, Oxford: Elsevier, Inc.
- (2) American College of Laboratory Animal Medicine Series. 1984. *Laboratory Animal Medicine*. Orlando, FA: Academic Press.
- (3) Animal Welfare Institute. 2010. *Caring Hands, Discussions by the Laboratory Animal Refinement & Enrichment Forum, Volume II*. USA: Animal Welfare Institute.
- (4) The Biology and Medicine of Rabbits and Rodents, 4th ed. 1995. Media, PA: William and Wilkens.
- (5) Bradford A, 2014. *Mouse Facts, Habits, Habitat and Types of Mice*. <https://www.livescience.com/28028-mice.html>
- (6) Bradford A, 2015. *Facts about Rats*. <https://www.livescience.com/52342-rats.html>

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(7) Bradford A, 2015. *Guinea Pig Facts*. <https://www.livescience.com/50658-guinea-pig-facts.html>

(8) Bradford A, 2017. Rabbits: Habits, Diets and Other Facts. <https://www.livescience.com/28162-rabbits.html>

III. **Advisory Subcommittee Review**

This request was submitted to the Advisory Subcommittee on Land Vertebrates for their review and recommendations. Their recommendations and comments are as follows:

- 1. I recommend approval ___ / ___ disapproval to allow the importation of Guinea Pig, *Cavia cobaya* (*cavia porcellus*), Domesticated Mice, *Mus musculus*, and Domesticated Rats, *Rattus species*, Animals on the List of Conditionally Approved Animals, by Permit, for Research, by University of Hawaii Animal & Veterinary Services.**

Dr. Allen Allison, Vice President/Assistant Director, Research and Scholarly Studies, Bernice Pauahi Bishop Museum: Recommends approval.

Comments: No comments.

Dr. Lanie Berry, Wildlife Program Manager, Department of Land and Natural Resources, Division of Forestry and Wildlife: Recommends approval.

Comments: No comments.

Dr. Isaac Maeda, DVM, Administrator/State Veterinarian, HDOA-Animal Industry Division: Recommends approval.

Comments: "None."

Mr. Tom May: No response.

Dr. Carolyn McKinnie, DVM, Senior Veterinary Medical Officer – Marine Mammals and Exotics, National Policy Staff, USDA, APHIS-Animal Care: No response.

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Dr. Robert Reed, Deputy Director of the United States Geological Survey, Pacific Island Ecosystems Research Center, Hawaii Volcanoes National Park: Recommends approval.

Comments: No comments.

Dr. Robert Thomson, Associate Director, School of Life Sciences, University of Hawaii at Manoa: Recommends approval.

Comments: "Permit conditions appear to be reasonable and in line with previous approval. I see no issues."

Dr. Amber Wright, Associate Professor, School of Life Sciences, University of Hawaii at Manoa: Recommends approval.

Comments: No comments.

2. I recommend approval ___ / ___ disapproval to update permit conditions for the importation Guinea Pig, *Cavia cobaya* (*cavia porcellus*), Domesticated Mice, *Mus musculus*, and Domesticated Rats, *Rattus species*, Animals on the List of Conditionally Approved Animals, by Permit, for Research, by University of Hawaii Animal & Veterinary Services.

Dr. Allen Allison, Vice President/Assistant Director, Research and Scholarly Studies, Bernice Pauahi Bishop Museum: Recommends approval.

Comments: No comments.

Dr. Lanie Berry, Wildlife Program Manager, Department of Land and Natural Resources, Division of Forestry and Wildlife: Recommends approval.

Comments: No comments.

Dr. Isaac Maeda, DVM, Administrator/State Veterinarian, HDOA-Animal Industry Division: Recommends approval.

Comments: "Page 20, 9. sentence "...shall comply with the pre-entry and post-entry animal health requirements, as applicable, of the Animal Industry Division (AID) pursuant to Chapter 4-28 is the poultry and bird chapter and doesn't apply . AI does not have a mice rat HAR."

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Mr. Tom May: No response.

Dr. Carolyn McKinnie, DVM, Senior Veterinary Medical Officer – Marine Mammals and Exotics, National Policy Staff, USDA, APHIS-Animal Care: No response.

Dr. Robert Reed, Deputy Director of the United States Geological Survey, Pacific Island Ecosystems Research Center, Hawaii Volcanoes National Park: Recommends approval.

Comments: No comments.

Dr. Robert Thomson, Associate Director, School of Life Sciences, University of Hawaii at Manoa: Recommends approval.

Comments: "Permit conditions appear to be reasonable and in line with previous approval. I see no issues."

Dr. Amber Wright, Associate Professor, School of Life Sciences, University of Hawaii at Manoa: Recommends approval.

Comments: No comments.

IV. Proposed Import Permit Conditions

1. The restricted article(s), Guinea Pigs, *Cavia cobaya* (= *Cavia porcellus*), Domestic Mice, *Mus musculus*, and Domestic Rats, *Rattus species*, including progeny, shall be used for research, a purpose approved by the Hawaii Department of Agriculture (HDOA), Board of Agriculture (Board), and may be cultured, propagated, or transferred in Hawaii. Release of the restricted article(s) into the environment is prohibited.
2. The permittee, Michael Wong, DVM, University of Hawaii Animal & Veterinary Services, 1960 East West Road, Biomedical Sciences Building T210, Honolulu, Hawaii 96822, shall be responsible and accountable for the restricted article(s) imported, including progeny, from the time of their arrival to their final disposition.
3. The restricted article(s), including progeny, shall be safeguarded at the University of Hawaii Animal & Veterinary Services, 1960 East West Road, Biomedical Sciences Building T210, Honolulu, Hawaii 96822 and at the University of Hawaii Animal & Veterinary Services, 651 Ilalo Street, Honolulu, Hawaii 96813 a site

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inspected and approved by the Plant Quarantine Branch (PQB) prior to importation. Prior to the removal of the restricted article(s) or progeny to another site, a site inspection and approval by the PQB Chief is required.

4. The restricted article(s) shall be maintained by the responsible person, Michael Wong, DVM, University of Hawaii Animal & Veterinary Services, 1960 East West Road, Biomedical Sciences Building T210, Honolulu, Hawaii 96822, or by trained or certified personnel designated by the permittee.
5. The restricted article(s) shall be imported only through the port of Honolulu except as designated by the Board. Entry into Hawaii through another port is prohibited unless designated by the Board.
6. All parcels containing these organisms imported into the State shall be placed in containers separate from other animals, and be conspicuously marked on at least four sides "LIVE MAMMALS" and "MAY BE OPENED AND DELAYED FOR AGRICULTURAL INSPECTION" in ½-inch minimum sized font. In addition, said parcels shall be delivered to:

ANIMAL QUARANTINE HOLDING FACILITY – AIRPORT
Daniel K. Inouye International Airport Honolulu, Hawaii 96819
Phone: (808) 837-8092.
7. Each shipment shall be accompanied by a complete copy of the PQB permit for the restricted article(s) and an invoice, packing list, or other similar PQB approved document listing the scientific and common names of the restricted article(s), the quantity of the restricted article(s), the shipper, and the permittee for the restricted article(s).
8. All bedding used to transport the restricted article(s) and fecal material from the restricted article(s) shall be bagged and disposed of directly into the municipal landfill.
9. The restricted article(s) shall comply with all pre-entry animal health requirements of the HDOA Animal Industry Division (AID) (Ph: (808) 837-8092).

PQB NOTES: *Condition No. 9 was amended as a result of comments and correspondence with Dr. Maeda. He was consulted on the language of this condition as presented.*

10. The restricted article(s) shall be subject to inspection by the HDOA, PQB, and the AID prior to entering the State. It is the responsibility of the permittee to provide

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- any restraint(s), including chemical restraint(s), deemed necessary by the AID to conduct a proper inspection. The permittee shall be responsible for ensuring an inspection is conducted.
11. The approved site, restricted article(s), including progeny, records, and any other document pertaining to the restricted article(s) and progeny under this permit, may be subject to post-entry inspections by the HDOA, PQB, and the AID. The permittee shall make the site, restricted article(s), including progeny, and records pertaining to the restricted article(s) and progeny available for inspection upon request by a PQB inspector.
 12. The permittee shall adhere to the use, facility, equipment, procedures, and safeguards described in the permit application and as approved by the PQB Chief and Board.
 13. The permittee shall have a biosecurity manual available for review and approval by the PQB, at the time of the initial site inspection and any subsequent post-entry inspection(s), which identifies the practices and procedures to be adhered to by the permittee to minimize or eliminate the risk of theft, escape, or accidental release of the restricted article(s), including the risk of introduction and spread of diseases and pests associated with the restricted article(s) to the environment. The permittee shall adhere to all practices and procedures as stated in this biosecurity manual.
 14. The permittee shall immediately notify the PQB Chief verbally and in writing under the following circumstances:
 - a. If any escape, theft, release, disease outbreaks, pest emergence and/or mortality involving the restricted article(s) or progeny under this permit occurs. If the restricted article(s) or progeny escape, or are found to be free from confinement, the HDOA may confiscate or capture the restricted article(s) or progeny at the expense of the permittee, pursuant to the Hawaii Revised Statutes (HRS), §150A-7(c). The AID shall also be notified of any sign or occurrence of disease.
 - b. If any changes to the approved site, facility, and/or procedures regarding the restricted article(s) or progeny occur or are to be made, the permittee shall obtain written approval from the PQB Chief as soon as practicable (if unplanned) or prior to implementation (if planned). Also, the permittee shall submit a written report documenting the specific changes to the PQB Chief.

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- c. If a shipment of the restricted article(s) is delivered to the permittee without a PQB "Passed" stamp, tag or label affixed to the article, container, or delivery order that indicates that the shipment has passed inspection and is allowed entry into the State, then the permittee shall not open or tamper with the shipment and shall secure, as evidence, all restricted article(s), shipping container(s), shipping document(s) and packing material(s), notify PQB and make the article available for PQB to inspect.
15. The permittee shall submit a copy of all valid licenses, permits, certificates or other similar documents required by other agencies for the restricted article(s) to the PQB Chief. The permittee shall immediately notify the PQB Chief in writing when any of the required documents are suspended, revoked, or terminated. This permit may be amended, suspended, or canceled by the PQB Chief upon suspension, revocation, or termination of any license, permit, certificate, or similar documents required for the restricted article(s).
16. 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) and progeny.
17. The permittee shall inform authorized researchers who utilize the restricted article(s) or progeny, that release into the wild is prohibited. The permittee shall maintain a record of all authorized researchers.
18. Any violation of the permit conditions may result in citation, permit cancelation, and enforcement of any or all of the penalties set forth in HRS §150A-14.
19. The permittee is responsible for costs, charges, or expenses incident to the inspection, treatment or destruction of the restricted 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.
20. A canceled 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 cancelation, any restricted article(s) imported under permit may be moved, seized, treated, quarantined, destroyed, or sent out of State at the discretion of the PQB Chief. Any expense or loss in connection therewith shall be borne by the permittee.

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21. The permit conditions are subject to cancelation or amendment at any time due to changes in statute or administrative rules restricting or disallowing import of the restricted article(s) or due to Board action disallowing a previously permitted use of the restricted article(s).
22. These permit conditions are subject to amendment by the PQB Chief in the following circumstances:
 - a. To require disease screening, quarantine measures, and/or to place restrictions on the intrastate movement of the restricted article(s), as appropriate, based on scientifically validated risks associated with the restricted article(s), as determined by the PQB Chief, to prevent the introduction or spread of disease(s) and/or pests associated with the restricted article(s).
 - b. To conform to more recent Board approved permit conditions for the restricted article(s), as necessary to address scientifically validated risks associated with the restricted article(s).
23. The permittee shall agree in advance to defend and indemnify the State of Hawaii, its officers, agents, employees and the Board of Agriculture members for any and all claims against the State of Hawaii, its officers, agents, employees or Board of Agriculture members 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: We request your recommendation and comments at the next meeting of the Advisory Committee on Plants and Animals.

**APPENDIX 1
PERMIT
APPLICATION**

PLEASE COMPLETE THE FOLLOWING INFORMATION (attach extra sheet if necessary)

1. State in detail the reasons for introduction (include use or purpose).
Biomedical and neurobehavioral research and training

2. Person responsible for the organism (include name, address and phone number).
Michael Wong, DVM
1960 East West Road
Biomedical Sciences Building T210
Honolulu, HI 96822
email: wongmich@hawaii.edu

3. Location(s) where the organism will be kept and used (include address, contact and phone number).
Kakaako Biosciences Building Vivarium
651 Ilalo Street
Honolulu, HI 96813

Manoa Vivarium
1960 East West Road
Honolulu, HI 96822

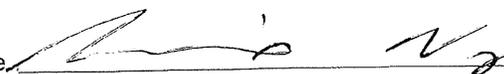
4. Method of disposition.
They are disposed in accordance with applicable federal, state, and city and county regulations

5. Give an abstract of the organism with particular reference to potential impact on the environment of Hawaii (include impact to plants, animals and humans).
All animals are under the jurisdiction of Animal and Veterinary Services (AVS). They are kept caged and/or used for experiments in secured rooms and restricted access. There is no potential for negative impact on the environment in HI, as these species are not regulated by the State of Hawaii. They are used and disposed of in accordance with the applicable federal, state, and city and county regulations.

I request permission to import the articles as listed on the permit application and further, request that the articles be examined by an authorized agent of the Department of Agriculture upon arrival in Hawaii.

I agree that I, as the importer, will be responsible for all costs, charges or expenses incident to the inspection or treatment of the imported articles.

I further agree that damages or losses incident to the inspection or the fumigation, disinfection, quarantine, or destruction of the articles, by an authorized agent of the Department of Agriculture, shall not be the basis of a claim against the department or the inspectors for the damage or loss incurred.

Signature  Date 10/01/22
(Applicant)

APPENDIX 2 RESUME

Michael Wong, DVM



wongmich@hawaii.edu

Professional Experience

Staff Veterinarian (Assistant Specialist) - University of Hawaii, Animal & Veterinary Service

(AVS).....Jan. 2005 – Present

Assist with the veterinary oversight of the System Wide animal care and use program involving 45 sites associated with the University of Hawaii (UH). To ensure the humane care and use of all vertebrate animals used by UH for research, training, and other activities, complies with all Federal, State, and local regulations and guidelines, at minimum, semiannual site inspections are performed. Vertebrate animals used at UH include and are not limited to fish, domestic and wild birds, endangered wildlife, domestic livestock, marine mammals, feral mammals, amphibians, reptiles, and conventional laboratory animals. Site inspections consist of physically examining the site, daily observations and health records, and a veterinary inspection report with follow up visits if deficiencies are noted. If serving as veterinarian on protocol, responsible for routine and emergency veterinary care for research animals throughout UH. An example of these responsibilities include veterinary care and maintenance of the overall health of the two biomedical vivariums managed by AVS through physical examinations, treatments, and disease monitoring via sentinel testing of both in house animals and quarantined animals. This entails maintaining/updating standard operating procedures (SOPs) for sentinel exposure, handling, ordering, and coordinating quarterly necropsies of sentinel animals exposed to bedding of resident animals of the same species. Necropsies include blood sampling for serologic testing, ecto- and endoparasite examination, and gross visualization of organ systems for detrimental change. Another example includes providing veterinary care for the Hawaiian Monk Seals and fish at the Waikiki Aquarium. Currently AVS serves as veterinarians on the majority UH IACUC protocols. Professional judgment on care of the research animals often requires working closely with principal investigators to facilitate research and maintain proper veterinary care in compliance with the Guide for the Care and Use of Laboratory Animals, The USDA Animal Welfare Act, and Public Health Service Policy. Other responsibilities as AVS Staff veterinarian include: Serve as Principal Investigator for 3 research/training protocols. Develop policies as they pertain to the humane care and use of animals throughout the University System. Serve as an alternate member of the Institutional Animal Care and Use Committee (IACUC) since 2005, attend monthly meetings, and review 275-300 vertebrate animal use protocols per year associated with UH. Serve as a member of the UH Institutional Biosafety Committee (IBC) since 2006, review protocols and sets policy for the University on research and teaching involving biosafety concerns. Prepare or update the current SOPs for the program of humane care and use for the biomedical animal research activities. Manage a staff of 2 Veterinary technicians. Develop new user orientation for the AVS vivariums at Manoa and Kakaako. Coordinate the rederivation of 400 mice within 15 mouse strains allowing for the transfer of mice from the mouse parvovirus infected Manoa vivariums to the specific pathogen free Kakaako vivarium. Facilitate Principal Investigator research through surgical aseptic technique guidance, assistance with protocol development and research assistance. Serve annually as a

judge at the JABSOM student symposium. Serve as a speaker at the careers after CTAHR workshop March 2014.

Veterinarian-Animal Clinic Mililani.....May 2003 - Dec. 2005
 Veterinary treatment of companion animals, consisting of physical examinations and vaccinations, diagnosing and treating disease processes, and performing surgical procedures, including spays neuters, and mass removals. Oversee all clinic operations. Manage a staff of four employees.

Associate Veterinarian-Kailua Animal Clinic.....Aug. 2002 - May 2003
 Veterinary treatment of companion animals, consisting of physical examinations and vaccinations, diagnosing and treating disease processes, and performing surgical procedures, including spays, neuters, and mass removals. Manage a staff of eight employees.

Veterinary Externship-Sea Life Park Hawaii.....April 2002 - May 2002
 Work directly with Dr Gregg Levine on all clinical cases. Develop water quality testing protocol for marine mammal facilities at Sea Life Park Hawaii. Complete all clinical labwork (cytology and avian hematology). Assist trainers in operant conditioning of marine mammals. Primary clinician in sea bird rehabilitation facility. Assist with necropsy of Blainville's beaked whale.

Veterinary Externship-Point Defiance Zoo and Aquarium.....March 2002
 Work directly with Dr Holly Reed on all clinical cases. Assist with physical exams on all species in the zoo and aquarium. Perform health examinations on 42 puffins. Assist with conservation project for endangered red wolves.

Marvet.....June 2001
 Completed a 2-week continuing education course on marine animal veterinary medicine. The course included daily lectures on marine mammal anatomy, physiology, and medicine, participation in a dolphin capture and release study with Dr Randy Wells, a dolphin, elephant seal, sea lion, and manatee necropsy.

Laboratory Technician-WADDL.....Aug. 2000 - May 2001
 Assist with diagnostic testing for whirling disease in salmonids.

Veterinary Externship-Sea Life Park Hawaii.....May 2000 - Aug. 2000
 Work directly with Dr. Gregg Levine on all clinical cases. Perform necropsies (dolphin, harbor seal, green sea turtle, stingrays, and sea birds), clinical lab work (cytology) and sea bird rehabilitation. Shadow trainers in all areas and fish phantom.

Volunteer-Honolulu Zoo.....May 2000 - Aug. 2000
 Volunteer under Dr. Ben Okimoto and assist in daily rounds. Observe surgeries and radiology. Perform fecal floatations and kennel upkeep.

Veterinary Technician-The Honolulu Pet Clinic.....May 1999 - Aug. 1999

Assist Dr. Roger Kondo with spays, neuters, surgeries, dental cleanings, administering medications, kennel upkeep, and assisting with clientele.

Laboratory Technician-University of Hawaii.....Aug. 1997 - May 1998

Assist Dr. Brad Leamaster with researching parasite levels in the gastrointestinal tract of beef calves. Spreadsheet organization of production data for a local rancher. Castrate wild boars for local farmers.

Intern-Honolulu Humane Society.....Jan. 1997 - May 1997

Assist veterinarian with prepping animals for surgery, assist technicians with cleaning and other miscellaneous duties, accompany humane officers on duties and observe case handling.

Laboratory Technician-University of Hawaii.....Apr. 1996 - May 1997

Assist Dr. Yong Soo Kim with researching protein breakdown in muscle fibers. Run SDS-PAGE electrophoresis and proximate analysis tests on different muscle samples. Maintain results on Microsoft Excel.

Directed Research-University of Hawaii.....Jan. 1996 - May 1996

Assist Dr. Charles Weems with surgery on sheep. Surgeries entail collecting blood samples and removing ovaries.

Veterinary Technician-The Cat Clinic.....Mar. 1995 - Aug. 1995

Assist Dr. Sue Sylvester with spays, neuters, dental cleanings, administering medications, cleaning cages, and assisting with clientele.

Teaching Experience

- Guest Lecturer, ANSC 140 Introduction to Veterinary Technology, Fall 2014, Windward Community College Veterinary Technician Program
- Guest Lecturer and Lab Assistant, ANSC 263 Laboratory Animal Procedures, Fall 2014 Windward Community College Veterinary Technician Program
- Guest Lecturer and Lab Assistant ANSC 263 Laboratory Animal Procedures Fall 2013, Windward Community College Veterinary Technician Program
- Course Instructor, ANSC 263 Laboratory Animal Procedures, Spring 2012, Windward Community College Veterinary Technician Program
- Guest Lecturer, ANSC 201 Principles and Practices of Animal Science, Spring 2009, dog and cat care, University of Hawaii at Manoa, Animal Science Program
- Guest Lecturer, ANSC 451 Physiology of Domestic Animals, Spring 2008, renal and respiratory physiology, University of Hawaii at Manoa, Animal Science Program
- Course Instructor, ANSC 453 Disease and Disease Control, Fall 2007, University of Hawaii at Manoa, Animal Science Program
- Course Instructor, ANSC 453 Disease and Disease Control, Fall 2006, University of Hawaii at Manoa, Animal Science Program

Education

- WASHINGTON STATE UNIVERSITY, Pullman, Washington.
Recipient of a Doctorate of Veterinary Medicine, May 2002.
- UNIVERSITY OF HAWAII, Honolulu, Hawaii.
Recipient of a Bachelor of Science Degree in Animal Science, May 1997.

Organizations

- Hawaii State Science Fair, Veterinarian on Scientific Review Committee 2011 – Present
- American Veterinary Medical Association, Member 2002 – Present
- Hawaii Veterinary Medical Association, Member 2002 – Present
- Hawaii Veterinary Medical Association, Treasurer 2004 – 2010

Awards

- Dr. Charles Reid DVM Scholarship 1996-1998
- All-American Scholar Collegiate Award 1997
- American Society of Animal Science Scholarship Award 1996, 1997
- Dr. Allen Y. Miyahara Award for Outstanding Animal Science Student 1996

**ATTACHMENT 1
PREVIOUSLY
ISSUED PERMIT**

Permit No.: 22-10-O-L7220

Start Date: 10/26/2021

Expiration Date: 10/26/2022



State Of Hawaii
 DEPARTMENT OF AGRICULTURE
 Plant Quarantine Branch
 1849 Auiki Street
 Honolulu, Hawaii 96819

IMPORT PERMIT

(Valid for Import - Multiple Shipments until 10/26/2022)

Permission is hereby granted to introduce the following commodity(s), in accordance with Chapter 4-71, Hawaii Administrative Rules of the Division of Plant Industry, Department of Agriculture, and the conditions listed below. (Each commodity must be inspected by a Plant Quarantine Inspector upon arrival before release).

| Quantity | Unit | Commodity | Scientific Name |
|----------|---------|--------------------|---------------------------------------|
| Various | Various | Mice, Domesticated | <i>Mus musculus</i> |
| Various | Various | Rat, Domesticated | <i>Rattus norvegicus</i> |
| Various | Various | Guinea Pig | <i>Cavia cobaya (Cavia porcellus)</i> |

(NO SUBSTITUTION ALLOWED)

INSTRUCTION to Shipper: One copy of permit to accompany shipment to Hawaii

Object of Importation: Research

Shipper: Various USA Shippers, _____ Phone: _____
 United States

Importer: University of Hawaii Animal & Veterinary Services (Sylvia Kondo), _____ Phone: (808) 956-4444
 1960 East-West Road, Biomedical Science T210, Honolulu, Hawaii 96822 United States

CHIEF PLANT INSPECTOR

CHAIRPERSON, BOARD OF AGRICULTURE

FOR OFFICIAL USE ONLY

STATION: _____ ARRIVAL DATE: _____ FLIGHT/SHIP: _____

WAYBILL NO: _____ INSPECTION DATE/TIME: _____ INSPECTOR: _____

REMARK: _____

PLANT QUARANTINE BRANCH PERMIT CONDITIONS

MAMMAL CONDITIONS (Guinea Pig, Chinchilla, Domestic Mice)

1. The organisms are for individual possession, businesses or institutions and may be cultured, propagated or resold in Hawaii.
2. The organism shall be kept caged or confined at all times to prevent escape. Unauthorized release into the wild is prohibited.
3. All parcels containing these organisms imported into the State shall be placed in containers separate from other animals and marked "**LIVE MAMMALS**" and "**MAY BE OPENED AND DELAYED FOR AGRICULTURAL INSPECTION**". In addition, said parcels shall be delivered to: ANIMAL QUARANTINE STATION, Daniel K Inouye International Airport, Honolulu, HI 96819, Phone: (808) 837-8092.
4. An invoice, bill of lading or other document shall accompany each shipment listing the permit number, common and scientific names, and the quantity of each organism imported into the State.
5. It is the responsibility of the permittee to comply with all applicable requirements of municipal, State, or Federal law pertaining to the conditionally approved animal(s).
6. Each shipment of mammal(s) shall be accompanied by a valid and current health certificate issued within seven days prior to entry into the State.
7. All parcels containing these organisms shall be subject to inspection by the Plant Quarantine Branch (PQB) prior to entering the State, and shall be imported through an approved port-of-entry as designated by the Board of Agriculture.
8. Permittee is subject to post-entry inspections by the PQB.
9. It is the responsibility of the permittee to inform and educate all prospective customers or clients that the unauthorized release of these organisms into the wild is prohibited and is subject to penalty.
10. Any violation of permit conditions is subject to penalty or cancellation of permit.
11. 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 articles 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 employee is a permittee in the employee's official capacity.

PLANT QUARANTINE BRANCH PERMIT CONDITIONS

1. The organisms, domesticated rat, *Rattus norvegicus* are for individual possession, businesses or institutions and may be cultured, propagated or resold in Hawaii. Determination of whether the rat is domesticated shall be made by Plant Quarantine Branch, which may be based on proper documentation.
2. All parcels containing these organisms imported into the State shall be placed in containers separate from other animals and marked, "**LIVE MAMMALS**" and "**MAY BE OPENED AND DELAYED FOR AGRICULTURAL INSPECTION**". In addition, said parcels shall be delivered to:

ANIMAL QUARANTINE STATION
Daniel K. Inouye International Airport
Honolulu, HI 96819, PH: (808) 837-8092.
3. An invoice, bill of lading or other document shall accompany each shipment listing the permit number, common and scientific names, and the quantity of each organism imported into the State.
4. It is the responsibility of the permittee to comply with all applicable requirements of municipal, state, or federal law pertaining to the conditionally approved animal(s).
5. Each shipment of mammal(s) shall be accompanied by a valid and current health certificate written by a licensed veterinarian ascertaining to the healthy condition of said mammal(s) issued within seven days prior to entry into the State.
6. All parcels containing these organisms shall be subject to inspection by the Plant Quarantine Branch (PQB) prior to entering the State, and shall be imported through an approved port-of-entry as designated by the Board of Agriculture.
7. The organisms shall be kept caged or confined at all times to prevent escape. Unauthorized release into the wild is prohibited.
8. Permittee is subject to post-entry inspections by the PQB.
9. It is the responsibility of the permittee to inform and educate all prospective customers or clients that the unauthorized release of these organisms into the wild is prohibited and is subject to penalty.
10. Any violation of permit conditions is subject to penalty or cancellation of permit.
11. 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 articles 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

employee is a permittee in the employee's official capacity.

**ATTACHMENT 2
CONDITIONALLY
APPROVED
ANIMAL LIST**

CONDITIONAL ANIMAL LIST

S4-71-6.5

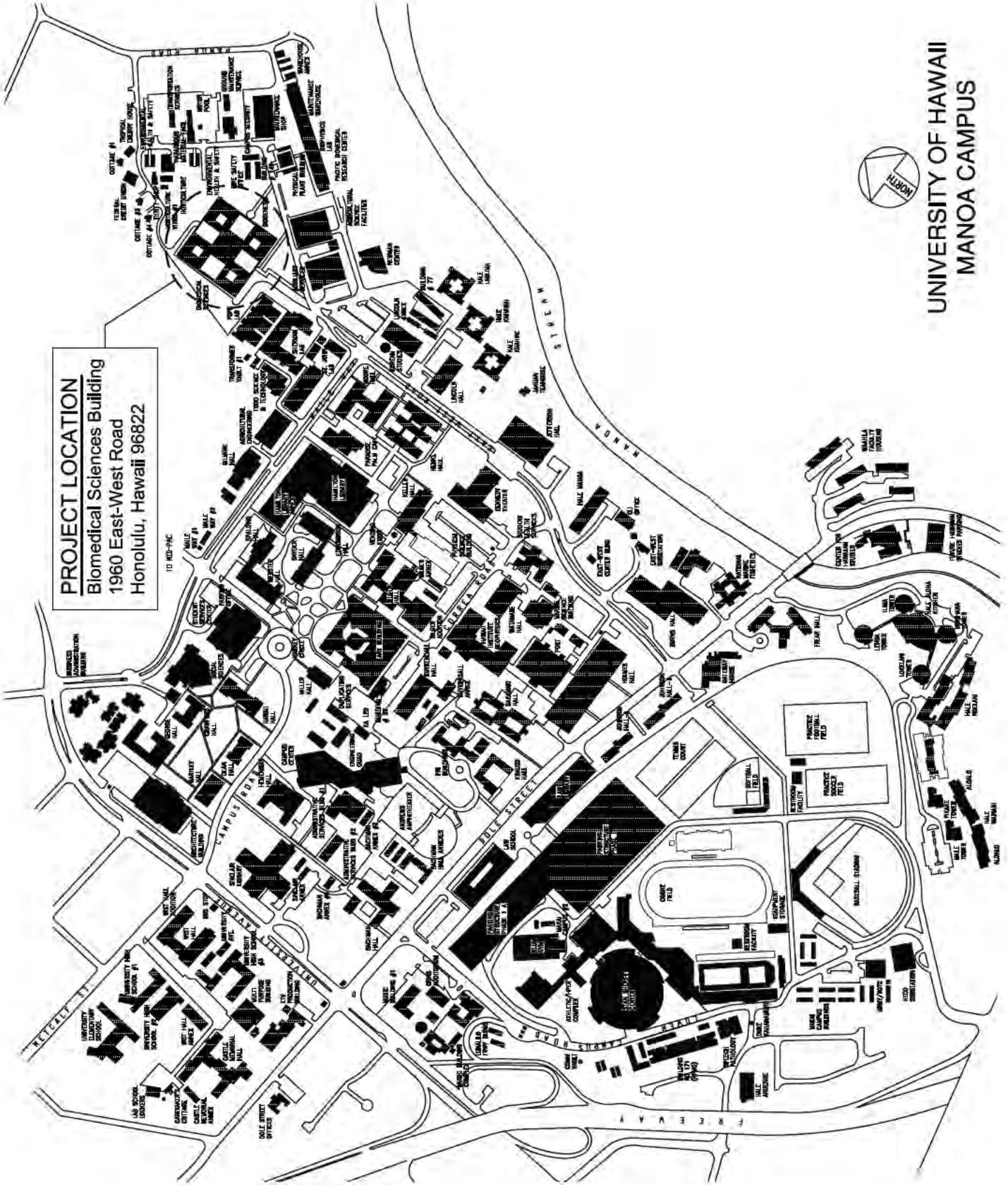
| <u>SCIENTIFIC NAME</u> | <u>COMMON NAME</u> |
|---|---|
| <u>Pionus</u> (all species in genus) | parrot |
| <u>Platycercus</u> (all species in genus) | rosella; ringneck |
| <u>Poicephalus</u> (all species in genus) | parrot |
| <u>Polytelis</u> (all species in genus) | parrot |
| <u>Probosciger aterrimus</u> | cockatoo, Palm |
| <u>Psephotus</u> (all species in genus) | parrot |
| <u>Psittacula alexandri</u> | parakeet, moustache (red-breasted) |
| <u>Psittacula cyanocephala</u> | parakeet, plum-headed |
| <u>Psittacula derbiana</u> | parakeet, Lord Derby's (Derbyan's) |
| <u>Psittacula eupatria</u> | parakeet, Alexandrine |
| <u>Psittacula himalayana</u> | parakeet, slaty-headed |
| <u>Psittacula roseata</u> | parakeet, rose-headed (blossom-headed) |
| <u>Psittacus erithacus</u> | parrot, grey |
| <u>Purpureicephalus spurius</u> | parrot, red-capped |
| <u>Pyrrhura</u> (all species in genus) | parakeet |
| <u>Tanygnathus</u> (all species in genus) | parrot |

| | |
|------------------------------------|-------------|
| ORDER Turniciformes | |
| FAMILY Turnicidae | |
| Turnicidae (all species in family) | buttonquail |

MAMMALS

| | |
|--|--------------------|
| PHYLUM Chordata | |
| CLASS Mammalia | |
| ORDER Rodentia | |
| FAMILY Caviidae | |
| <u>Cavia cobaya</u> (=Cavia porcellus) | guinea pig |
| FAMILY Chinchillidae | |
| <u>Chinchilla lanigera</u> | chinchilla |
| FAMILY Muridae | |
| <u>Mus musculus</u> | mice, domesticated |
| <u>Rattus sp.</u> | rat, domesticated |

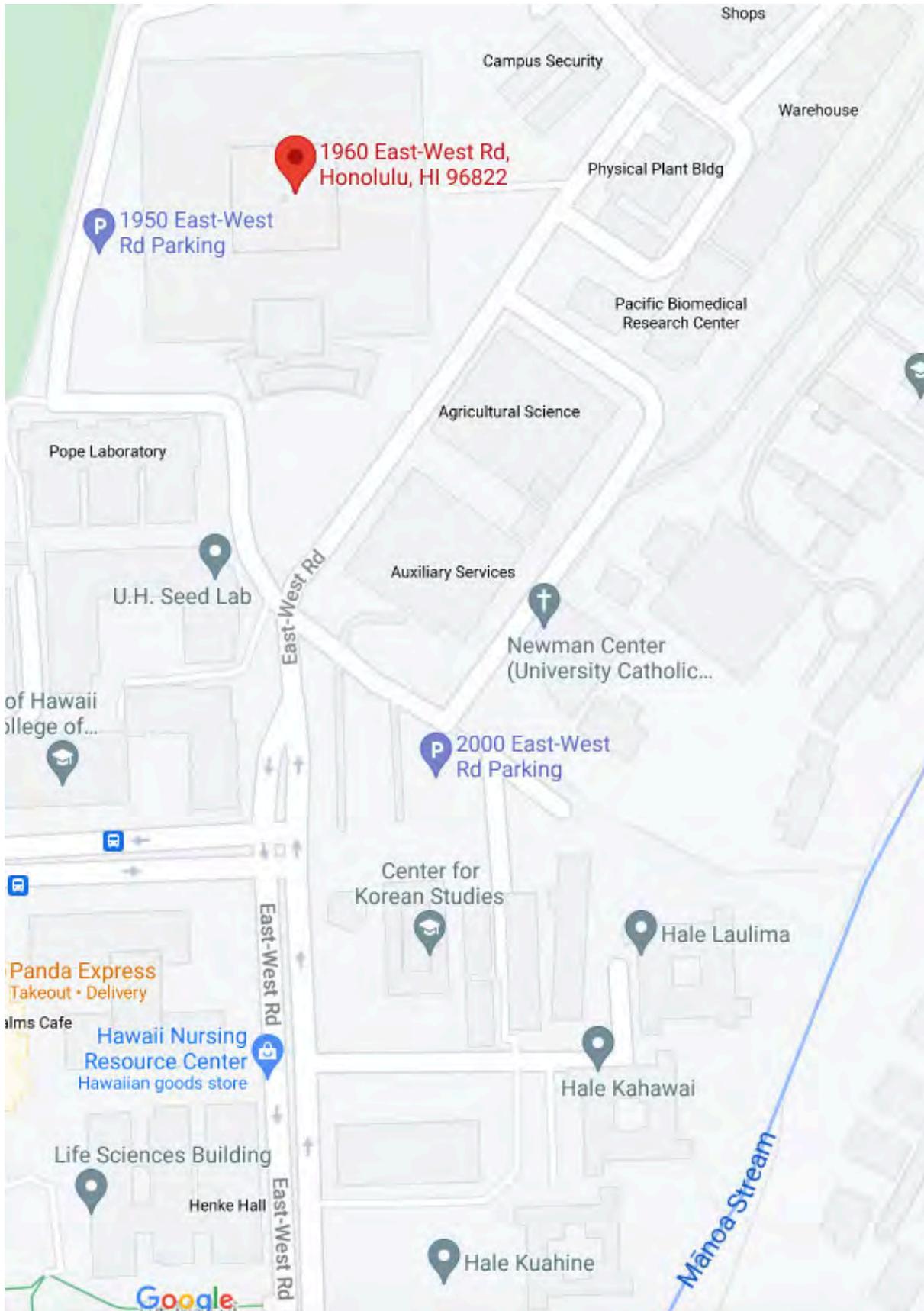
ATTACHMENT 3
MANOA VIVARIUM

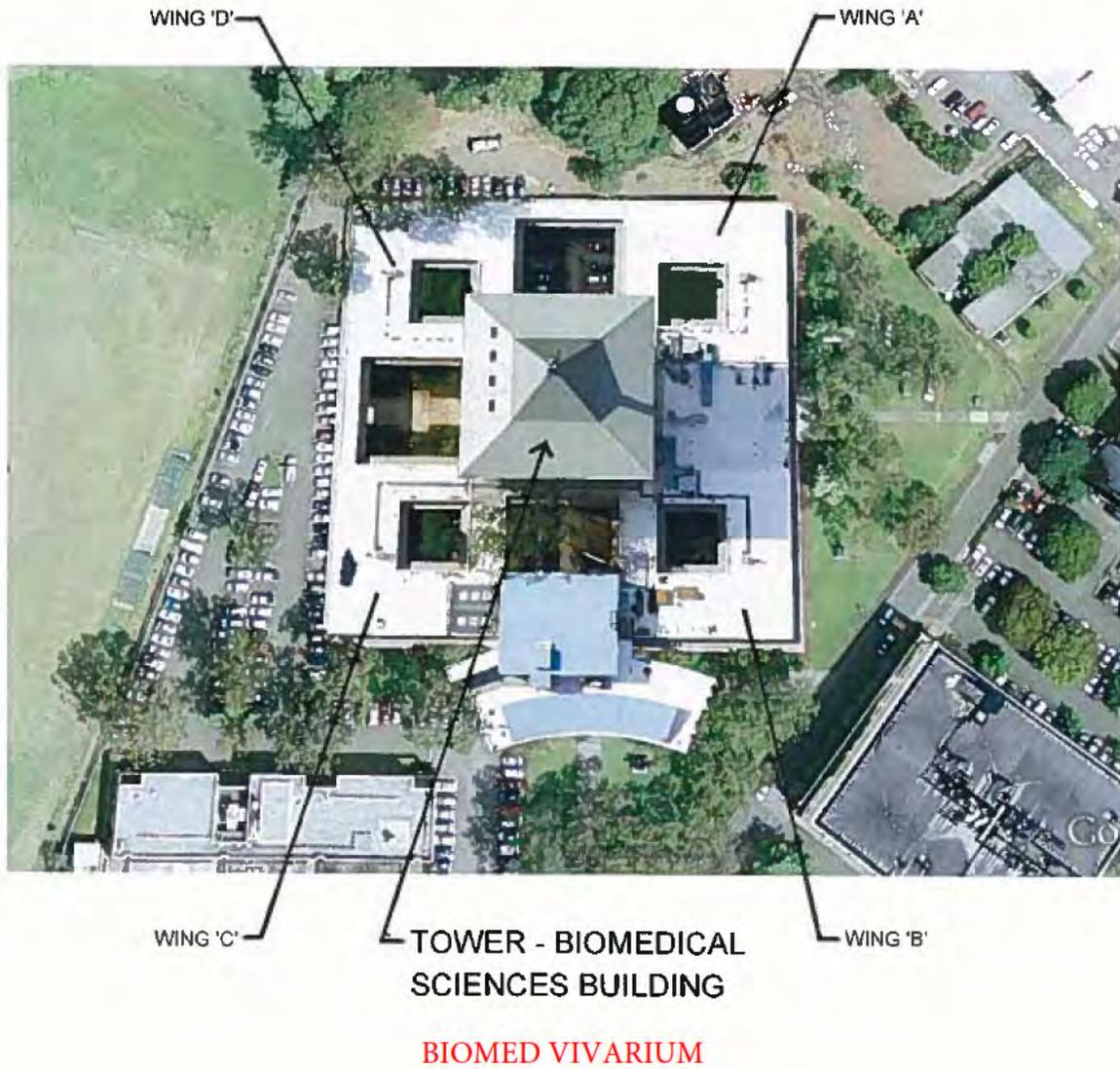


PROJECT LOCATION
Biomedical Sciences Building
1960 East-West Road
Honolulu, Hawaii 96822

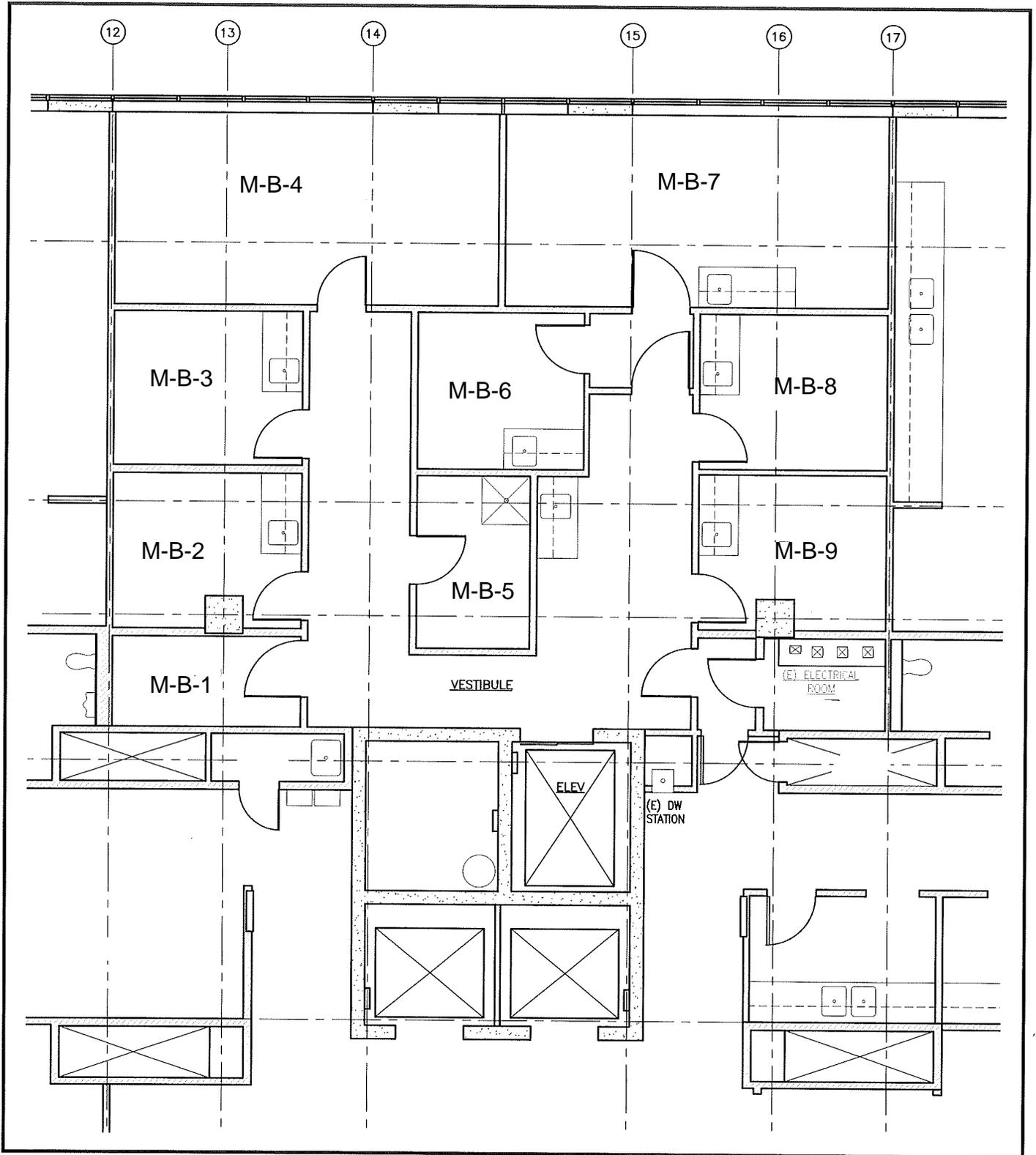


UNIVERSITY OF HAWAII
MANOA CAMPUS





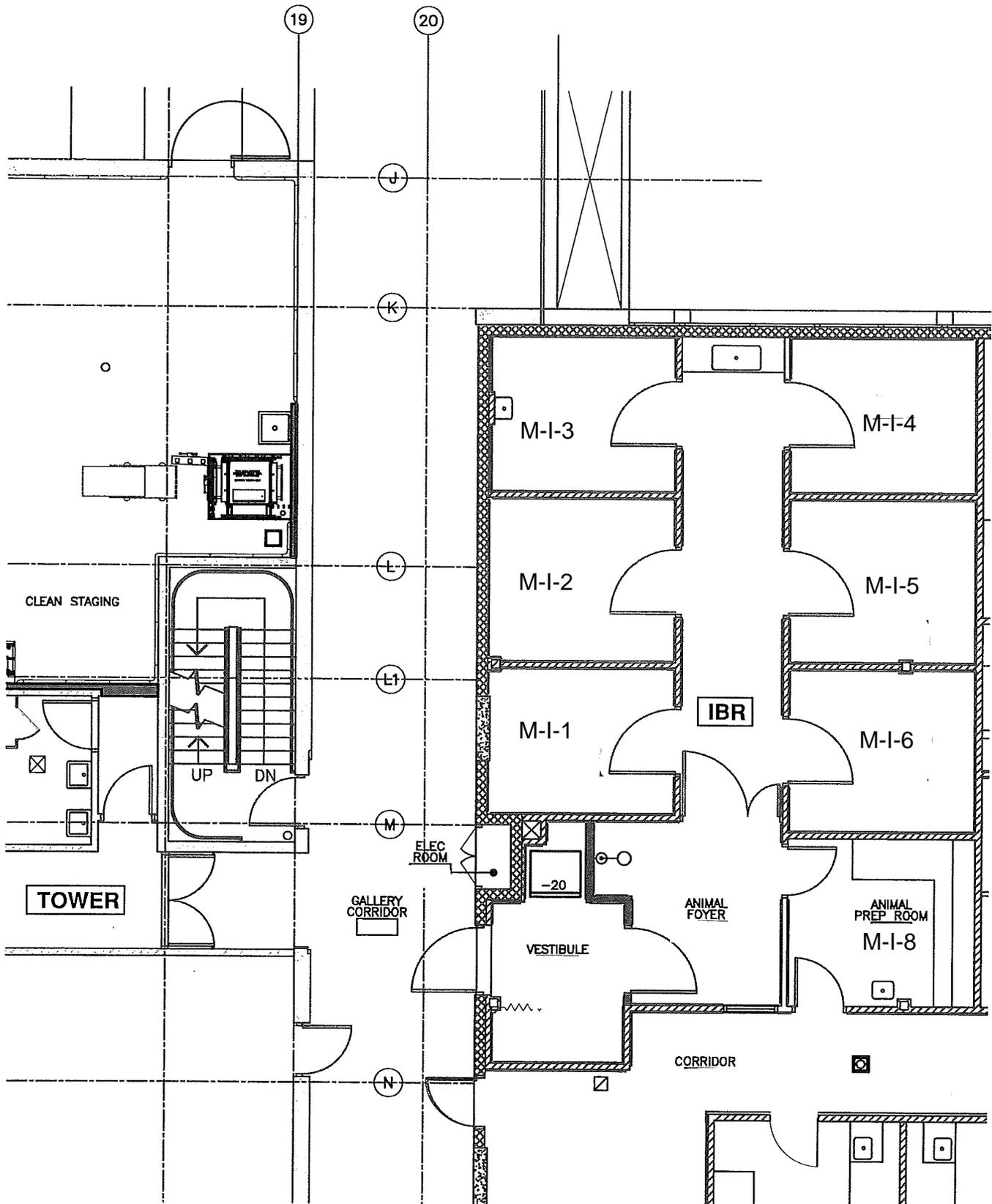
Biomedical Sciences Building
University of Hawaii at Manoa
1960 East-West Road
Honolulu, Hawaii 96822



PARTIAL EXISTING FLOOR PLAN BIOMED VIVARIUM

SCALE: 1/8"=1'-0"

1,251 assigned square feet



PARTIAL FLOOR PLAN

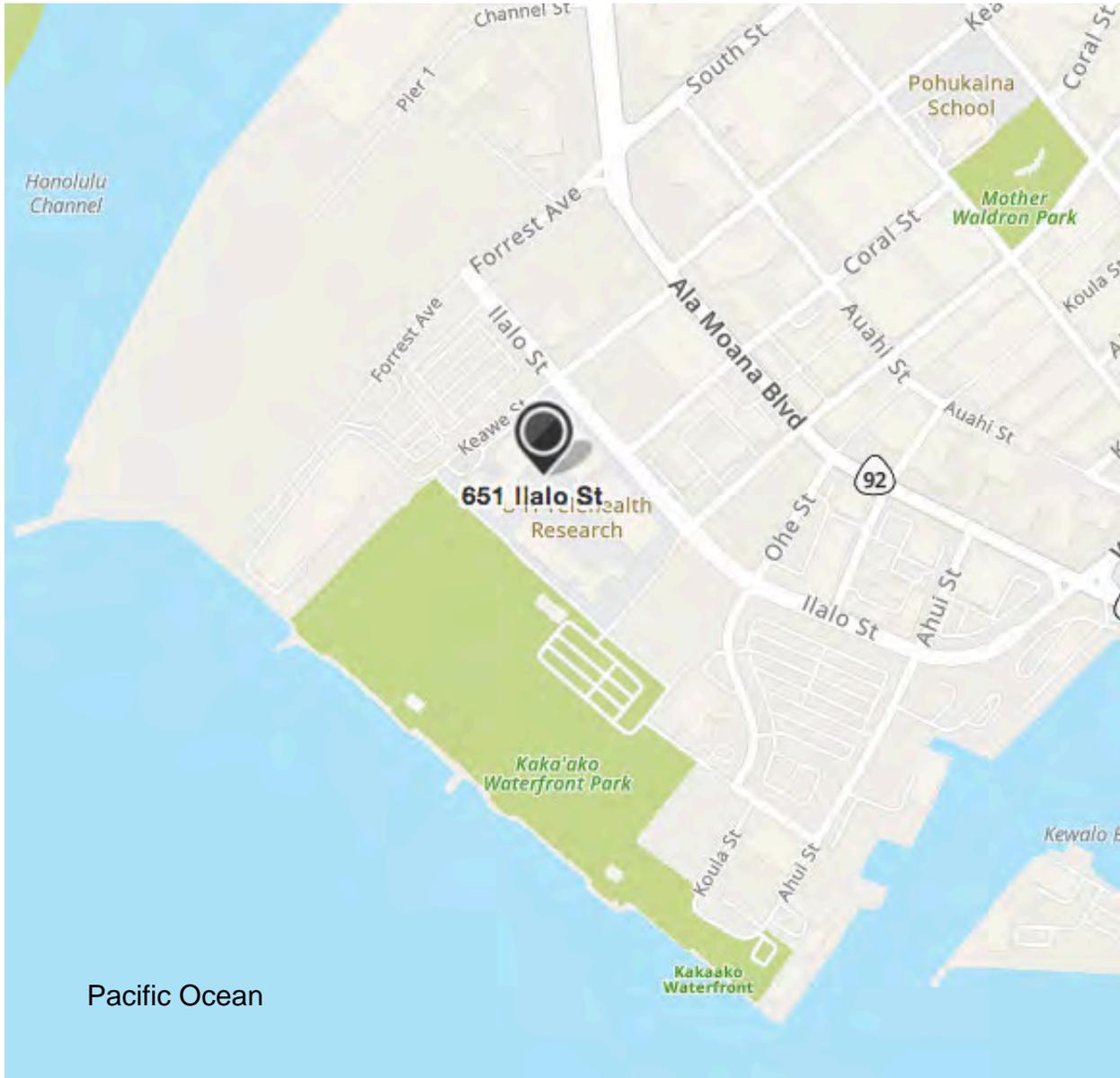
SCALE: 1/8" = 1'-0"
1,182 sq. ft.

7/17/12

INSTITUTE FOR BIOGENSIS RESEARCH
Vivarium

**ATTACHMENT 4
KAKAAKO (FACILITY K)
VIVARIUM**

**Kakaako Campus Vivarium
(Facility K) 651 Ilalo Street,
Honolulu, HI 96813**



Ilalo St

**KAKAOKO WVARUM
(Ground Floor)
Facility K**

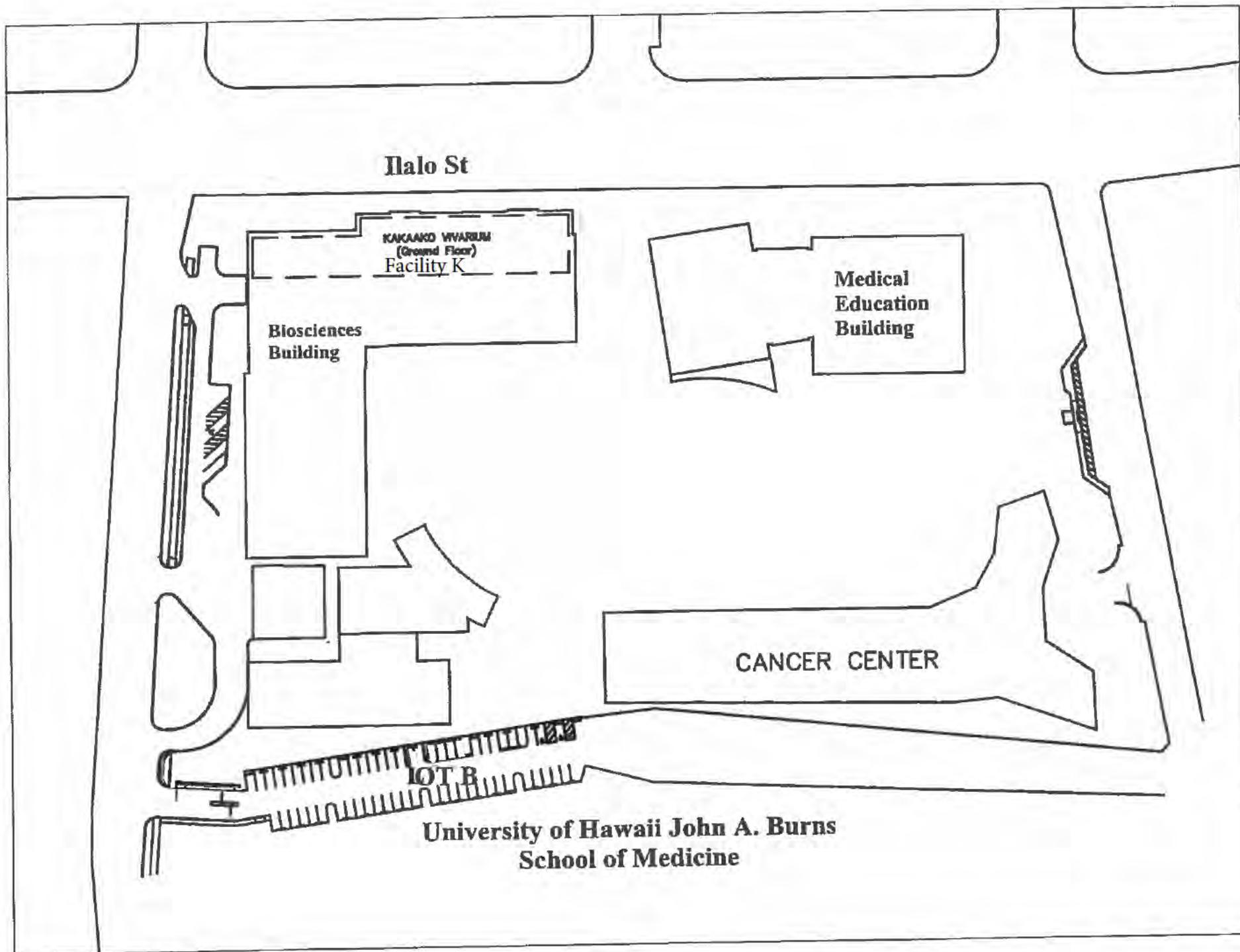
**Biosciences
Building**

**Medical
Education
Building**

CANCER CENTER

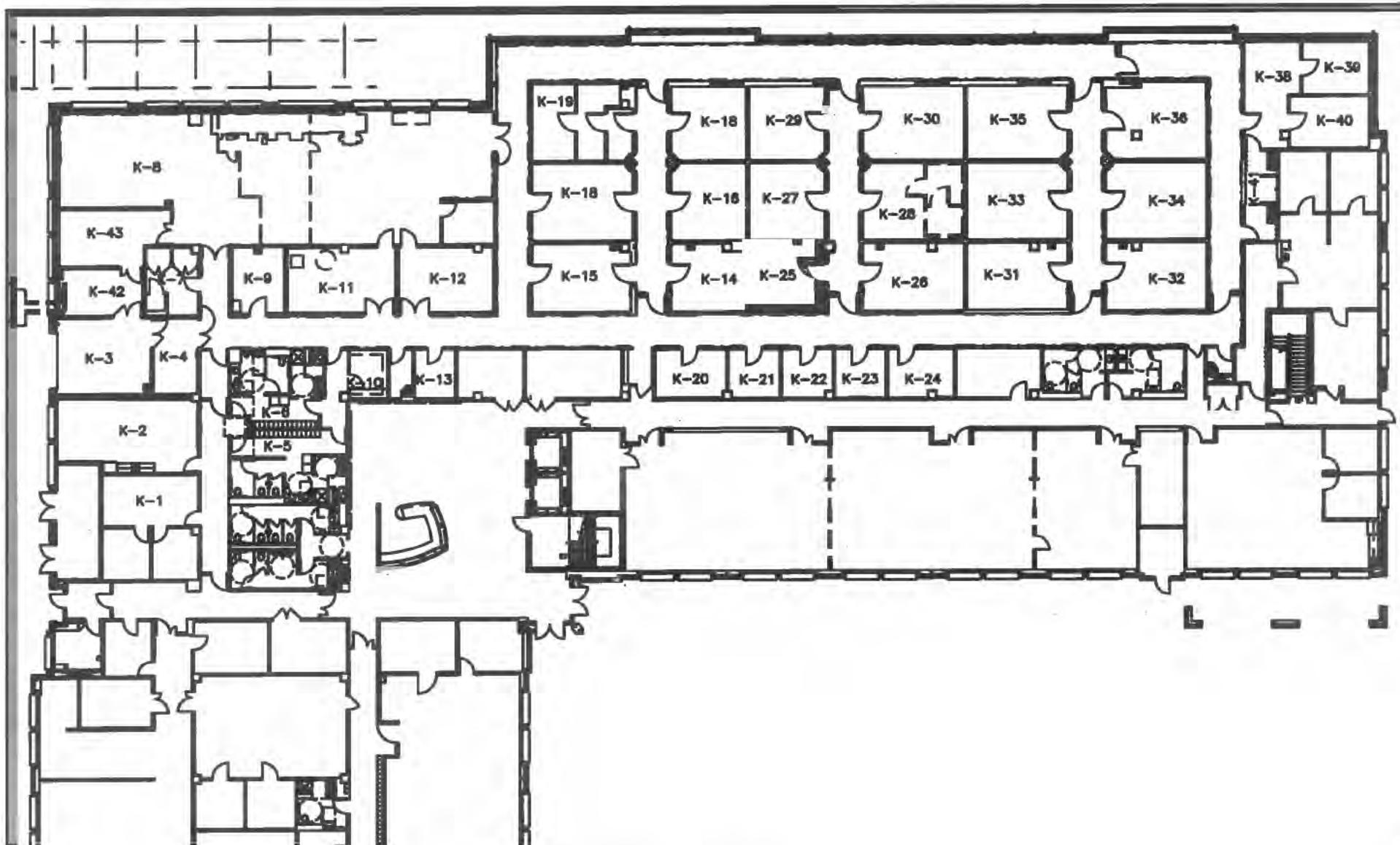
LOT B

**University of Hawaii John A. Burns
School of Medicine**



Kakaako Biosciences Building





FACILITY K (18,160 nsf) Less Janitor's Closet = 18,127 sq. ft.

**ATTACHMENT 5
CAGE
CONTAINMENT**

INDIVIDUALLY VENTILATED CAGES & RACK SYSTEM



Mouse IVC rack set up



Rat IVC rack set up

**ATTACHMENT 6
ISOCAGE
CONTAINMENT**

ISOCAGES FOR BIOCONTAINMENT STUDIES

ISOcage N system has been designed to achieve the safety and protection of an isolator coupled with the advantages of an IVC, in terms of ergonomics, flexibility and density. ISOcage N is an isolator at cage level that allows the carrying out of multiple studies on the same rack, providing strong Biocontainment for maximum personnel protection.

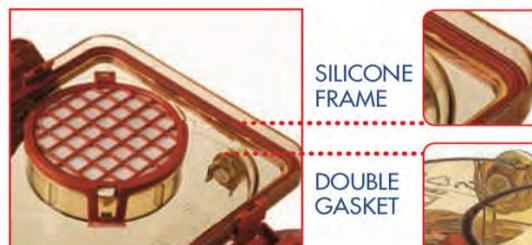


Rack configuration

| | |
|--------|----------------------------------|
| ISO30N | 30 cages (6w x 5h), single sided |
| ISO36N | 36 cages (6w x 6h), single sided |
| ISO60N | 60 cages (6w x 5h), double sided |
| ISO72N | 72 cages (6w x 6h), double sided |

OPERATORS' SAFETY

- High resistant Polyphenylsulfone cage to ensure the integrity of the cage even if dropped, hit or mechanically stressed
- Two blowers working simultaneously: redundancy in the unfortunate case of a blower failure
- Battery back-up system can provide adequate ventilation for more than 24 hours in case of power failure
- Possibility to export data via USB, error recording, on-line help menu, UPS-saver mode, connection to BMS: safety and easy data monitoring



SILICONE FRAME

DOUBLE GASKET

CAGE LEVEL HEPA FILTER FOR EXHAUST AIR

IDEAL BIOCONTAINMENT

- Exhaust air is HEPA filtered at cage level: complete confinement of biohazards at cage level, keeping the air circuits sterile
- Twin clamps and double gasketed self-closing nozzles: ISOcage N is a real airtight, hermetic cage. Once removed from the rack, it remains pressurized for a long time: safety and protection for operators
- Pressure driven microprocessor based ventilation control: constant high negative pressure to provide safe environment



SPECIAL CLOSURE CLAMPS

DENSITY AND ERGONOMICS

- Being an isolator at cage level, ISOcage N allows the carrying out of different studies on the same rack, achieving an IVC-like density
- Large touch screen with user-friendly interface: easy to use and check parameters or eventual alarms
- Automatic Visual Docking Indicator and great visibility: operator can immediately see if the cage is properly in place for a safer and easier daily check

ANIMAL WELFARE

- The Air Handling Unit provides ventilation without transmitting vibrations to the rack, ensuring standardization of the experiment
- Air valves placed in the top in order to avoid undesired variables that may affect research outcomes, such as air drafts at animal level

LOW RUNNING COSTS

- New low consumption ECM DC-Blowers together with protection-related lower personnel costs reduce the overall system's running costs



Isocage rack set up

**ATTACHMENT 7
RABBIT CAGE
CONTAINMENT**

RABBIT CAGES



**ATTACHMENT 8
SECURITY
LOCKS**

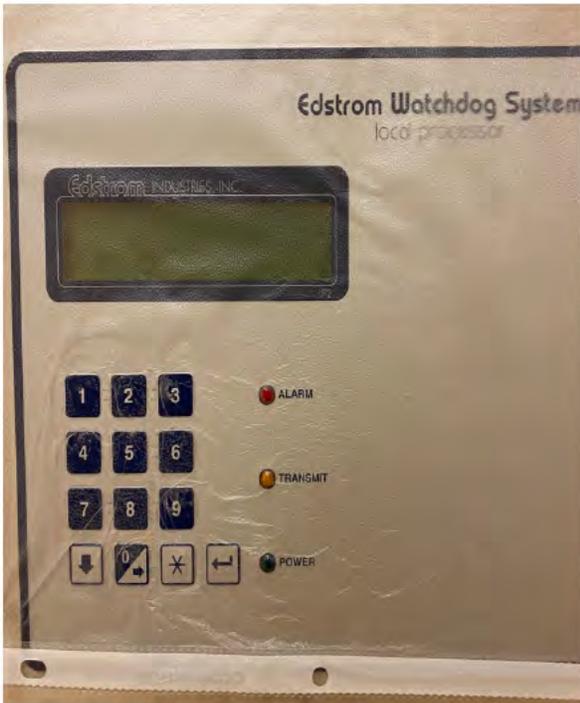
SECURITY (LOCKS)



Manoa IBR perimeter with FOB key access



Manoa Biomed & IBR Eplex locks



Kakaako Watchdog unique pin code



Kakaako biometrics with access card lock



Kakaako perimeter doors with key card access

**ATTACHMENT 9
KAKAAKO (FACILITY K)
VIVARIUM USE SOP**

Kakaako Vivarium Use SOP



Failure to follow the designated procedures listed in this SOP may result in loss of entry privileges. All incidents will be documented.

Entry Requirements:

• Authorized entry only is permitted. Do not share unique access codes with others, and do not allow tailgaters into the vivarium. Authorized access to Kaka'ako facilities is for activities specifically related to one's employment, or specific business at Kaka'ako, and for no other reason. Access cards and codes will not be used to permit other individuals to gain access, be lent out to others, or be used for "piggybacking" other authorized persons in. Privileges may be suspended or terminated for engaging in any of the above-listed activities or compromising security at the facility (propping doors open at critical access points).

AVS Security Access Request form. Upon receipt of this form, AVS veterinary staff will schedule a vivarium orientation needed before access is granted.

- Lockers for storage of personal items will be assigned after the researcher's initial orientation, upon request. AVS will not be responsible for the contents stored in lockers. Items abandoned in lockers for more than six months will be discarded.
- All visitors must obtain approval prior to entry.

Visitors to the Vivarium. All visitors, vendors, service, and delivery people must be escorted and wear PPE, and follow traffic flow patterns.

Traffic Flow:

- Follow all traffic patterns to prevent contamination of the vivarium. Research personnel do not use the clean corridor, which is dedicated for clean supplies only.
- All work in suite 1 must be completed before entering suites 2 or 3, quarantine, or the ABSL3 suites. Access to suite 1 after entering other areas of the vivarium is prohibited unless otherwise arranged with AVS. Access to suites 2 and 3 after entering quarantine or the ABSL3 is prohibited.

(Do not use emergency exit doors for entry into or exit out of the vivarium. This is a serious breach of biocontainment and security of the vivarium.)

Vivarium Entry and PPE:

• Main entry and exit for all personnel is through UH room [REDACTED]. Individuals are not allowed entry into the vivarium if they visited another animal facility prior to arriving at vivarium. For individuals with rodent or rabbit pets at home, it is highly recommended that they not handle the pets prior to entry into the vivarium. If

handling is necessary, showering, washing your hair, and changing your clothes are required prior to entry.

- All personnel must enter through the locker rooms (UH room [REDACTED] men's and UH room [REDACTED] women's).
- Investigators must don a lab coat or dedicated vivarium scrubs, which do not leave the vivarium, and shoe covers over closed-toed shoes before entering the vivarium. AVS staff must don scrubs, dedicated, closed-toed shoes.
- Those handling animals must wear gloves. Those working with sterile housed animals or performing aseptic procedures must also wear hair bonnets and surgical masks.
(*If approved to reenter suite one after having worked in other areas of the vivarium, don new shoe covers at the suite one entry door*)
- AVS staff will doff scrubs and change to street clothes when leaving the Research Building. No lab coats or scrubs are to be worn in the Medical Education Building.
- Additional PPE or modified traffic flow patterns will be required for special activities and are protocol dependent.

Transporting Equipment to and From the Vivarium:

• If transporting small pieces of equipment or packages into the vivarium, items are to be brought to the airlock, UH [REDACTED], on researcher transport carts and then transferred to a dedicated, black, vivarium cart.

Kaka'ako Vivarium Use SOP

First Issue 4/25/06, revised 6/26/09, 10/10/11, 1/5/15, 11/16/15, 11/25/16

IACUC Approved 12/9/11

Kakaako Vivarium Use SOP

which are kept in the airlock for researcher use. Decontaminate the items in airlock with the provided disinfectant (clidox 1:18:1). This does not apply to phones, notebooks, or pens, as decontaminating spray may damage these items. All items are to follow EHSO transport guidelines below. Items that do not have a function in the vivarium are not permitted. Cloth//cardboard/absorbent material cannot be brought in – only solid, leak proof containment can be used.

- If delivering large items into the vivarium, arrange a time with AVS management at least 24 hours in advance to enter through vivarium loading dock and UH room [REDACTED], Loading Airlock. Arrangements can be made by emailing halljn@hawaii.edu, or rqpost@hawaii.edu. Decontaminate items before entering the vivarium with the provided disinfectant (clidox 1:18:1).

EHSO Guidelines:

1. When moving material through the common areas/non-BSL2 areas (e.g. lobbies, elevators, stairwells, etc.) on each floor or between floors, ALL chemical and biological material MUST be packed to prevent spill or release, i.e. in a lidded primary container, placed in secondary leak proof containment (e.g. plastic bucket, a 4L solvent bottle carrier, a tray), secured during transport, etc. In these common/non-lab areas of the building, you may be exposing others (students, visitors, security, etc.) to your material so it MUST be properly contained. If materials are spilled, you must notify others in the area, prevent others from contacting the spilled material, it must be properly cleaned and decontaminated IMMEDIATELY. If materials spilled cause irreparable damage to the facility (floors or carpets), the responsible individual may burden the cost of replacement.
2. When moving hazardous materials throughout the BSB, you must have access to an appropriate spill kit (biological, chemical, radiological) and be trained in how to respond to a spill. Notify JABSOM EHSO if you must transport highly hazardous materials or materials that pose a greater risk if spilled or released (e.g. corrosive or toxic chemicals, etc.). All spills, minor or major, must be reported to JABSOM EHSO.
3. PPE Policy Remove (gloves, lab coats, booties, bonnets, etc.) prior to entering common/non-BSL2 areas (lobbies, break rooms, office spaces, bathrooms, elevators, stairwells, etc.) and before contacting communal items (doorknobs, phones, elevator buttons, etc.). If the materials you are transporting are properly contained (as described in section 1 above), no PPE should be necessary while in these areas. If you must handle a container with gloves, you must use an ungloved hand to contact doorknobs or use a cart to transport the container(s).

Transporting Animals:

- Arrangements to import animals from approved vendors and outside institutions are made through the AVS office. Transfers to and from outside institutions must also be coordinated through AVS. Imports must follow current AVS quarantine procedures and yield “clean” sentinel screening before the animals can be moved to the regular colony.
- Animals may only be brought to outside labs within the Bioscience Building if the procedure is terminal and approved by the IACUC to take place out of the vivarium. (See Terminal Animal Procedures Outside the Vivarium SOP)
- Movement of animals between animal holding rooms and suites must be coordinated with AVS staff.

Working in the ABSL2 Vivarium:

- All investigators and research staff must be listed as personnel on an approved IACUC protocol (and IBC protocol if applicable). In addition, all animal manipulations performed in the vivarium must also be listed on an approval IACUC protocol (and IBC protocol if applicable). Violators will be reported to the IACUC (and IBC if applicable), which may result in suspension of protocol activities.
- While working with animals, any time a cage is opened within the animal holding rooms, cages must be opened either in an animal transfer station or a biosafety cabinet. Within the procedure rooms, it is recommended that cages are opened under the Biosafety cabinets, fume hoods, or on down draft tables. Clean cages or cages containing animals must never be placed on the floor.
- Loud music (other than head phones), food, drink, and handling of cosmetics are not permitted.
- When filling out new cage cards, it is critical that certain fields on the temporary cards are filled out. If there is no date indicated, AVS will assume that the cage may have existed since the last weekly scan and that cage will be charged for since that date. This could result in unnecessary charges. The “Protocol #” and “Animal Count” fields must be filled out as well. If needed information is missing, researchers will be charged back for the time it takes to contact staff for the information.
- When cages are no longer in use, for example when animals are euthanized or animals are combined for breeding, the cage card that is no longer needed is turned in. The date the cage is terminated must be written on the back of the Granite/Topaz card and placed in the cage card drop box. If no stop census date is indicated, AVS will stop census on the day the card is collected from the drop box which may not be the day the cage was terminated.

Exiting the Vivarium: (See Laundry SOP if you require laundering services)

- Personnel and equipment exit the animal suites through the Soiled Corridor. Doff gloves before exiting animal holding and procedure rooms. Doff lab coat and shoe covers before exiting the vivarium.
- Exit the vivarium through the locker rooms via UH room [REDACTED]. Do not exit through airlock [REDACTED], this room is only for decontaminating small items being brought into or out of the vivarium.

Kaka`ako Vivarium Use SOP

First Issue 4/25/06, revised 6/26/09, 10/10/11, 1/5/15, 11/16/15, 11/25/16

IACUC Approved 12/9/11

**ATTACHMENT 10
ESCAPED RODENT
SOP**

Escaped Rodent SOP- AVS Staff

First Issue: 7/5/11, Revised: 7/21/11, 1/8/15, 7/29/15, 11/7/16, 11/15/17, 10/17/18
 Approved by IACUC: 10/20/11 Biosafety: 7/29/15

Minimum PPE: Gloves, Gowns, Booties. Additional PPE is protocol dependent.

Environmental Risk Response From Theft, Loss or Release of a Rodent

1. If the escape occurs within a Biosafety Cabinet, immediately close the sash and gather capture materials. Try to safely capture the rodent by placing a transparent container over it and slide a thin piece of hard plastic (ie: a clipboard) under the container. Avoid attempting to capture the rodent with your hands; escaped rodents may be more aggressive and bite or scratch in these situations. Place captured rodent into a separate cage, secure, and label. Do not place the rodent into its original cage if other mice are in that cage. Notify the Principal Investigator (PI) and Facility Supervisor of the recaptured rodent. Be cautious of open vial of biological materials.
2. If the rodent is outside the Biosafety Cabinet and has not been infected with a biological material or contaminated with a chemical/radiation and does not fall under the permit conditions of the Hawaii Department of Agriculture or the NIH Guidelines for Research Involving Recombinant DNA or Synthetic Nucleic Acid Molecules and the rodent cannot be captured, place a sign on the door entry stating "CAUTION ESCAPED MOUSE or RAT in ROOM – Be very cautious when entering and exiting the room, date, and contact information".
3. Immediately capture the rodent as safely described above. Place captured rodent into a separate cage, secure, and label. Do not place the rodent into its original cage if other mice are in that cage. Notify the Operations Supervisor and the PI. The PI is given the opportunity to look at the mouse and decide to keep or euthanize it.
4. If the rodent cannot be captured immediately, set AVS approved live traps and check at least daily until the rodent is captured. Once rodent is captured, notify the AVS Program Manager, Operations Supervisor, and PI. Place the mouse in the Biosafety cabinet in Kakaako room [REDACTED] / Manoa room [REDACTED]. Euthanasia is recommended for mice that may have had contact with spaces of unknown health status. If the PI wishes to keep the animal, it must be quarantined and tested prior to housing in the regular colony again.

Environmental Risk Response From Theft, Loss or Release of a Rodent Infected with Biological Safety Level-2 Pathogen

5. If the rodent is infected with a biological materials, is dosed with a chemical/radiation or falls under the permit conditions of the Hawaii Department of Agriculture or the NIH Guidelines for Research Involving Recombinant DNA or Synthetic Nucleic Acid Molecules, do not leave the room until the rodent is captured using aforementioned methods. All biological, chemical, or radioactive material must be closed and secured.
 - a. If the rodent is infected with a biological material or is contaminated with a chemical/radiation when it escapes and is recaptured, use the appropriate decontamination procedures to decontaminate all areas the rodent has had contact outside of its cage; inside the biosafety cabinet (BSC) or outside the BSC. Notify the Biosafety Officer (biohazards) or Environmental Health and Safety (chemical hazards), Radiation Safety Officer, Operations Supervisor, AVS Program Manager, Public Safety and PI immediately. Place a sign on door entry, "DO NOT ENTER SPILL CLEAN UP IN PROGRESS", date and sign, until it is deemed safe to re-enter.

Escaped Rodent SOP- AVS Staff

First Issue: 7/5/11, Revised: 7/21/11, 1/8/15, 7/29/15, 11/7/16, 11/15/17, 10/17/18
Approved by IACUC: 10/20/11 Biosafety: 7/29/15

- b. If the rodent falls under the permit conditions of the Hawaii Department of Agriculture and it escapes the facility or cannot be captured, posing a threat to the environment, the AVS Program Manager or designee must contact the following entities within two business days:

1. Plant Quarantine Branch in the event of any theft, accidental release, exposure or disease outbreaks involving the microorganisms or inoculated mice.

Microorganism Specialist
Plant Quarantine Branch
1849 Auiki Street
Honolulu, Hawaii 96819
Phone: (808) 832-0589
Fax: (808) 832-0584

Land Vertebrate Specialist
Plant Quarantine Branch
1849 Auiki Street
Honolulu, Hawaii 96819
Phone: (808) 832-0579
Fax: (808) 832-0584

2. UH Research Compliance Office
Biosafety Officer

[Redacted contact information for UH Research Compliance Office Biosafety Officer]

- c. If the escaped rodent falls under the NIH Guidelines for Research Involving Recombinant DNA or synthetic nucleic molecules in the event of any theft, accidental release, exposure or disease outbreaks involving the microorganisms or inoculated mice, the AVS Program Manager or designee will immediately contact the UH Biosafety Officer noted under above in item b.2.

6. If rodent falls under items a, b or c, the AVS Program Manager or designee will report the incident to the UH Institutional Animal Care and Use Committee and the UH Regulatory Compliance Officer.

- a. UH IACUC Chairman

[Redacted contact information for UH IACUC Chairman]

- b. Regulatory Compliance Officer

[Redacted contact information for Regulatory Compliance Officer]

*If there is any potential exposure as a result of the incident, follow all procedures for exposure response, reporting and follow up.

ATTACHMENT 11 A&B EMERGENCY RESPONSE PLANS

11A MANOA VIVARIM
11B KAKAAKO (FACILITY K) VIVARIUM

**EMERGENCY OPERATIONS PLAN
ANIMAL & VETERINARY SERVICES AT Manoa**

| | | |
|---|-------------------------|--|
| Date First Issued: 12/7/99 | Authored by: [REDACTED] | Approved by IACUC: 7/21/05, 5/20/10, 9/19/13 |
| Revised: 6/20/05, 1/27/09, 5/20/10, 10/30/12, 9/6/13, 6/12/15, 11/18/15, 7/29/16, 1/18/19, 9/17/19 | | |

The following plan was written in conjunction with information from the University of Hawaii at Manoa (UHM) Emergency Management Program (<http://manoa.hawaii.edu/emergency/management/>) and JABSOM Environmental Health and Safety Office (www.jabsom.hawaii.edu), UH Research Compliance and Biosafety Office, National Weather Service (<http://www.prh.noaa.gov/hnl/>), the Pacific Tsunami Warning Center (<http://ptwc.weather.gov/>), UC Davis Influenza Emergency Response Plan, and the Federal Emergency Management Agency (FEMA) (www.fema.gov). The plan is designed for AVS at Manoa to be self-sufficient for up to 3 days (72 hours) in the event of a disaster, and to protect the environment and public from inadvertent release of hazardous agents.

HAZARD ASSESSMENT FOR AVS

| Hazard Category | Examples |
|---|---|
| Natural | Hurricane, tsunami, earthquake |
| Flood | Plumbing failure, water leak |
| Technological | Systems failure, structural failure |
| Fire | |
| Civil | Deliberate human acts of destruction |
| Pandemic and Inadvertent Release of Pathogens | Avian Influenza |
| Medical Emergency | Life Threatening, heart attack, loss of consciousness |

GENERAL INSTRUCTIONS

1.0 **Emergency Classifications** (Modified from UH Manoa Emergency Response Plan: <http://manoa.hawaii.edu/emergency/management/>)

1.1 **Type 1 (Minor Incident)**

- 1.1.1 A Type 1 minor incident is localized or in a small area. It can be quickly resolved with existing UHM resources or limited outside help. A Type 1 incident has little or no impact on personnel or normal operations outside the locally affected area.
- 1.1.2 Type 1 incidents do not require activation of the UHM Emergency Response Plan (ERP). Impacted personnel, departments or offices coordinate directly with operational personnel from EHSO, Security and the Facilities Management Office to resolve Type 1 incidents.

1.1.3 Examples: Odor complaints; localized chemical spill; plumbing failure or water leak.

1.2 Type 2 (Emergency)

1.2.1 A Type 2 emergency disrupts sizable portions of UHM Campus. Type 2 emergencies require assistance from external organizations. These events can escalate quickly and have serious consequences for mission-critical functions and/or life and safety.

1.2.2 The Manoa Emergency Management Team, the President of the University of Hawai'i, and State Civil Defense may be alerted depending on the nature and severity of the emergency.

1.2.3 The Manoa Emergency Management Team (EMT) Executive (Chancellor) or an authorized representative receives intelligence from responding operational departments and determines whether the ERP and Emergency Response Center (ERC) should be activated.

1.2.4 Examples: Building fire or explosion, biological or terrorist threat, major chemical or hazardous material spill, severe windstorm or flooding, and extensive utility outage. Also includes external emergencies that may affect Manoa personnel or operations.

1.3 Type 3 (Disaster)

1.3.1 A Type 3 disaster involves a large part of UHM campus and its surrounding community. Normal operations are curtailed or suspended. The effects of the disaster are wide-ranging and complex. A timely resolution of disaster conditions requires Campus-wide cooperation and extensive coordination and support from external jurisdictions.

1.3.2 The UHM Chancellor is notified and the UHM ERP and ERC are activated. (State Civil Defense is notified and communications opened. Manoa EMT members and other key personnel are alerted to report to Campus and the Campus Emergency Response Teams (CERTs) are activated and engaged in the Campus emergency response. Operations and Finance units activate plans to respond with facilities personnel and resources and provide the necessary financial, contracting and claims support. Plans and Logistics units activate plans to provide intelligence, record keeping and distribute material and equipment and assign personnel where needed. The Manoa EMT Executive activates the Public Information Plan and requests support from the System Joint Information Office.)

1.3.3 The President is notified and the System EMP and Emergency Operations Center (EOC) may be activated. System EMT members may be alerted to report to Campus.

2.0 **Communications:** The type of emergency will dictate the degree to which the emergency contact tree is activated, as well as the action plan.

2.1 **Type I (Minor Incident)** is usually reported to the Operations Supervisor to resolve problem. Depending on the situation, EHSO (for chemical emergencies), Biosafety Office (for biosafety emergencies), or Facilities may be notified. The incident is reported to the Program Manager.

2.2 **Type 2 (Emergency) and Type 3 (Disaster) - The Emergency Phone Tree is activated (see below).** The **Program Manager or designee** is the emergency point of contact for AVS, receiving reports of an impending emergency, and communicating with UH Administration. The Program Manager contacts the Operations Supervisor, Veterinarian, and Office of the Vice

President for Research and Innovation via the Director of the Office of Research Compliance, EHSO (for chemical emergencies), Biosafety Office (for biosafety emergencies), and Principal Investigators (if affected) will be contacted.

- 2.3 Phone rosters of all **AVS employees** are maintained in a confidential manner by the Operations Supervisor, Veterinarians, and Fiscal Officers. The **Operations Supervisor** will contact the animal care staff at Manoa about the emergency, and instruct them on whether to report for duty, if the alert occurs outside of normal business hours.
- 2.4 An emergency phone roster is posted prominently throughout the facility for easy reference during an emergency. Emergency contact numbers for the Program Manager, Operations Supervisor, Veterinarians, Security, EHSO, Biosafety Office, Facilities, 911, and Straub Medical Clinic will be posted.
- 2.5 For **reportable** type 1-3 emergencies/incidents involving vertebrate animals used for research, teaching, testing, the AVS Program Manager shall file a report with the Regulatory Compliance Office within 48 hours.
- 2.6 For **non-reportable** type 1-3 emergencies/incidents involving vertebrate animals used for research, teaching, testing, the AVS Program Manager will inform the Regulatory Compliance Office and the UH Institutional Animal Care and Use Committee (IACUC) at the next convened IACUC meeting.
- 2.7 **AVS Emergency Contact Tree for Type 2 and 3 Biosafety Emergencies – refer to Appendix A.**
- 2.8 **AVS Emergency Contact Tree for Type 2 and 3 Chemical Emergencies – refer to Appendix B.**
- 2.9 Staff will listen to the radios (battery operated capabilities) for updates from State Civil Defense. The same message should be available on all channels. Battery operated radios (along with spare batteries to last up to 3 days) will be situated in the staff break room [REDACTED].
- 2.10 In an emergency, all FTE employees may be considered essential during the watch and/or warning periods. The Director or designee will pre-determine a team of at least two essential workers from AVS in the event of an impending emergency. During an emergency, the first tier of essential workers includes the Operations Supervisor and the Senior Staff. As additional help is required, the second tier of essential workers includes the UH Administrative and Professional Research Support (APT RS) position, followed by RCUH staff, and UH animal care students. If circumstances prevent the RCUH employee from reporting to their normal workplace, the Program Manager will have the staff placed on vacation status if an alternative workplace is not available during the unforeseen disruption in work schedule (RCUH Policy 3.262). If circumstances prevent the UH APT RS position from reporting to their normal workplace, and an alternative workplace is not available, the employee will be paid for the time during the unforeseen disruption in work schedule. The Program Manager will work closely with the Operations Supervisor, and will review emergency roles with each employee. The employees will be instructed to contact the Operations Supervisor if they have any questions regarding their work status/schedules.
- 2.11 The Program Manager or designee may assign essential staff, usually a team of two persons at Manoa, to provide essential animal care for the facility during the alert (watch) and warning phase of the disaster. In many cases, the Program Manager will instruct that no person should be in the building during the warning and actual event phase. NOTE: Prior to or during a

Warning Phase, UHM may require the buildings be evacuated and locked down.

- 2.12 The Senior staff who is at work during the event should carry his/her cell phone in order to facilitate communication.
- 2.13 Before leaving the facility, all employees should contact the Operations Supervisor, to ensure that no one is left in the facility inadvertently and to review emergency roles for the next day
- 2.14 In the event of prolonged power outages, cellular phones or similar methods of communication will be provided by AVS for essential staff.

3.0 Natural Disasters

3.1 Hurricanes Alert Phase

- 3.1.1 National Weather Service can usually forecast high winds, heavy rain, flooding, damaging surf and hurricanes with a high degree of accuracy.
- 3.1.2 A Hurricane Watch means that hurricane conditions are possible within 36 hours. During a watch, listen to radio and television (TV) broadcasts and check the University of Hawai'i Website.
- 3.1.3 A Hurricane Warning is issued when sustained winds of 74 mph or higher associated with a hurricane is expected within 24 hours. County Civil Defense sirens will sound. Continue to listen to radio and TV broadcasts and check the University of Hawai'i Website.
- 3.1.4 Hurricanes also produce coastal flooding. Therefore, all should plan for and be prepared to respond to coastal flooding as described in the Action Plan for Tsunami and Coastal Flooding.

3.2 Hurricanes Event Phase

- 3.2.1 If time and conditions permit, the University will convene its EMT and issue instructions via local radio, TV, email and telephone tree on whether classes and/or work schedules will be suspended. Designated and essential employees may be asked to report to their work site to implement emergency preparation and emergency/security duties.
- 3.2.2 In most cases, rodents and other small mammals will be secured and provided food and water sufficient to last 5 days before employees leave the facility. Extra nesting material is provided to the cages. Animals will be moved into areas that are void of glass windows. In many cases this will mean moving the racks and cages into the corridors.
- 3.2.3 Biomed [REDACTED] [REDACTED], floors: All rooms with glass windows must be covered with plywood (minimum 3/4") and bolted to the building or covered with hurricane panels. The building envelope (windows and door openings) must be protected from penetration by wind borne debris. The covering of the windows should be priority one to ensure a continued efficiency of operations of the laboratory before, during and after a hurricane strike. However, if this is not possible then the second alternative should be covering the glass panel in the door, leading from the room containing the glass windows, with plywood. The door leading from the room on the makai side of the building should be

locked and secured. The animals can be moved for safe keeping to one of the vacant rooms along the hallways. The covering of the windows from the room interior is not usually recommended as a normal course of action because structurally it is difficult to anchor the window cover to the building. Interior window coverings measures are recommended only if the window cover can withstand 80mph winds as called for in the Uniform Building Code for the City and County of Honolulu.

- 3.2.4 Supplies of non-perishable food and bedding sufficient to last at least a week should be moved from the food storage areas to the corridors or rooms closest to the animals.
- 3.2.5 Water should be collected in spare water bottles and stored in the clean cage wash room. Filled carboys will also provide several days of water for the facility. Reserve water supplies should be sufficient to last at least 5 days for maintenance of all animals in the facility. Water should be rationed first for maintenance of life and then used to maintain a healthy primary environment for the animals.
- 3.2.6 Flashlights and a supply of batteries to last up to three days should be placed in readily accessible areas. Flashlights and lanterns with fluorescent bulbs appear to provide better illumination. Non-battery operated crank type flashlights should also be kept on hand. Along with flashlights and batteries, a first aid kit, bottled water, non-perishable human food supplies, and port-a-potty should be kept in cupboards in the Manoa staff break room [REDACTED].
- 3.2.7 Animal records should be secured in waterproof wrapping or box in an appropriate place to prevent damage or loss.
- 3.2.8 During an evacuation, the Operations Manager should be in contact with all employees to ensure that no one is left in the facility inadvertently and to assign emergency roles for the next day.
- 3.2.9 If severe winds or a flood watch occurs while class is in session, employees or visitors are on site, the following Emergency Actions should be followed:
 - 1. Seek shelter in designated buildings on Campus. A list of designated buildings with the specific rooms and areas that can be used will be made available after shelter surveys and requirements are completed in 2006.
 - 2. If a designated shelter is not available or shelter locations are unknown, students, staff and visitors should go to a designated County Civil Defense shelter. In the case of hurricanes or high winds where no known shelters are available, seek shelter in a large building and stay away from windows and exterior doors.
- 3.2.10 In the case of possible flooding, leave basements or low lying buildings and go to designated shelters or to the upper floors for shelter. Do not seek shelter in basements of buildings unless it has been designated as a shelter.
- 3.2.11 Persons responsible for buildings, classrooms or laboratories shall ensure that all handicapped persons have been assisted to reach a shelter or cover.
- 3.2.12 Avoid gymnasiums and other structures with large roof spans. If in a best available building instead of a designated shelter, evacuate rooms subject to full force wind and remain near an inside wall away from windows. Close all windows and blinds.

- 3.2.13 Keep tuned to a local Emergency Alert System (EAS) radio station for the latest advisories.
- 3.2.17 Following a hurricane, there can be prolonged power outages, addressed below under Electricity and Water Utilities Outages on pages 14-15.

3.3 Tsunamis or Coastal Flooding Alert Phase

- 3.3.1 The island of Oahu is highly susceptible to tsunami and coastal flooding as these events have occurred many times in the past. However, the UHM campus is outside of the current NOAA inundation zone, as described by the Pacific Disaster Center (<http://static.pdc.org/tsunami/index.html>).
- 3.3.2 Tsunami Watch: Pacific Tsunami Warning Center (PTWC) has determined the earthquake may very likely have created a tsunami and is advising parties to be alert as PTWC awaits tide data to support tsunami generation.
- 3.3.3 Tsunami Warning: PTWC finds conditions serious enough to issue immediate concern to parts of the Pacific. The message will include approximate arrival times for various parts of the Pacific.
- 3.3.4 **Pacific-wide tsunami warning** bulletin is issued by PTWC after confirmation has been received that a tsunami has been generated in the Pacific that has caused damage, or has the potential to cause damage, at distances greater than 1,000 km (625 miles) from the epicenter, and thus poses a widespread threat to any populated coastal area within the Pacific Basin.
- 3.3.5 A **regional tsunami warning** bulletin is a tsunami warning issued initially to coastal areas near the earthquake epicenter. It is usually based only on seismic information without tsunami confirmation, and is initially issued as a means of providing the earliest possible alert of a potentially destructive tsunami to the population near the epicenter of a potentially tsunamigenic earthquake. Areas in a regional tsunami warning are generally less than three hours from the estimated tsunami arrival time. A list of estimated arrival times for warning areas is provided in the bulletin. This condition implies that all coastal areas in the region should be prepared for imminent flooding.
- 3.3.6 **Urgent Local Tsunami Warning.** An urgent local tsunami warning is a tsunami warning issued by the PTWC to Hawaii for tsunamis generated in Hawaiian coastal waters. It may be based only on seismic information without tsunami confirmation, or on a combination of seismic and sea level data, and is issued as a means of providing the earliest possible alert of a potentially destructive local tsunami. Areas in an urgent local tsunami warning may have only minutes before tsunami waves arrive, so urgent action is required to save lives.
- 3.3.7 A local earthquake of high magnitude in the Hawaiian area may generate a tsunami where no warning is provided. The Pacific Tsunami Warning Center on O'ahu ([.prh.noaa.gov/ptwc/](http://prh.noaa.gov/ptwc/)) provides the initial warning to the public via State and County Civil Defense Agencies and their EAS radio and television stations.
- 3.3.8 When a Tsunami Warning is issued, the County Civil Defense Agency will sound emergency sirens. The EAS will carry official tsunami advisories and provide shoreline evacuation instructions.

- 3.3.9 Coastal flood and storm surge warnings associated with hurricanes may be issued by the National Weather Service (<http://.nws.noaa.gov/alerts/hi.html>).

3.4 Tsunamis or Coastal Flooding Event Phase

- 3.4.1 **Tsunami** - The estimated time of arrival will dictate the course of action to be taken. The person in charge at the affected facility shall initiate the following emergency actions:

Coastal Flooding – The magnitude and location of possible tsunami, storm surges or hurricanes that result in coastal flooding will dictate the course of action to be taken. The person in charge at the affected facility shall initiate emergency actions.

- 3.4.2 For facilities on the shoreline or low-lying coastal areas – If the ground shakes or the ocean suddenly withdraws or surges inland unusually, move to high ground immediately. Do not delay egress to listen to radio, TV or EMT instructions.
- 3.4.3 The UH Manoa Emergency Management Program may order alert warning and/or Evacuation.
- 3.4.4 In most cases, when advanced notice is given, rodents and other small mammals will be secured and provided with food and water sufficient for five days before employees leave the facility. Extra nesting material is provided to the cages.
- 3.4.5 Animal records should be secured in waterproof wrapping or box in an appropriate place in the mechanical penthouse to prevent damage or loss.
- 3.4.6 Supplies of non-perishable food and bedding sufficient to last at least a week should be moved from the food storage areas to a designated area in the mechanical penthouse closest to the animals. Water should be collected in spare water bottles and stored in the mechanical penthouse closest to the animals. Filled carboys will also provide several days of water for the facility. Reserve water supplies should be sufficient to last at least 5 days for maintenance of all animals in the facility. Water should be rationed first for maintenance of life and then used to maintain a healthy primary environment for the animals.
- 3.4.7 Sufficient numbers of flashlights should be placed in readily accessible areas and sufficient supplies of batteries to use for up to three days. Flashlights and lanterns with fluorescent bulbs appear to provide better illumination. Non-battery operated crank type flashlights should also be kept on hand. In addition a first aid kit, bottled water, non-perishable human food supplies, and port-a-potty, along with flashlights, should be kept in the Staff break room [REDACTED]
- 3.4.8 During an evacuation, the Operations Supervisor should be in contact with all employees to ensure that no one is left in the facility inadvertently and to assign emergency roles for the next day.

3.5 Earthquakes Alert Phase

- 3.5.1 In the event of an earthquake, safety for humans is of the utmost importance. Refer to UHM Action Plan for Earthquakes. It is safest practices the “Drop, cover and hold” maneuver under a sturdy piece of furniture. If indoors, stay there, drop to the floor, get

under a desk or table or stand a corner. If outdoors, get to an open area away from trees, buildings, buildings and power lines. If in a high-rise building, stay away from windows and outside walls, stay out of elevators and get under a table. If driving, pull over, avoid overpasses and power lines, and stay inside your car.

- 3.5.2 Earthquakes are unpredictable and strike without warning. Damage to buildings, structures and infrastructure can range from negligible to severe depending on the magnitude of the earthquake. Possible severe outcomes of an earthquake are a tsunami, wave damage, coastal flooding and fires.
- 3.5.3 Earthquake Warnings: Since earthquakes are unpredictable, warnings are not usually given. Earthquake advisories may be provided by State and County Civil Defense Agencies due to increased seismic activity.

3.6 Earthquake Event Phase

- 3.6.1 Building occupants shall stand against the wall away from windows or get under desks or tables. Special attention shall be given for the safety of handicapped persons. Avoid glass and falling objects by moving away from windows or large panes of glass and from under suspended light fixtures or objects such as artwork or wall hangings.
- 3.6.2 Implement local emergency plan to EVACUATE THE BUILDING when instructed to or when the earthquake is over. EVACUATE to a pre-designated open area to assemble and conduct an accountability check. DO NOT BLINDLY RUN OUTSIDE as parts of the building may still be falling. Move to a clear area away from the building and large trees.
- 3.6.3 DO NOT RETURN to any building for any reason until the building is declared safe. Subsequent shocks may follow initial tremor.
- 3.6.4 Put out all flames or fires. Do not light any fires after quake has hit.
- 3.6.5 Avoid touching fallen electrical wires and stay away from damaged utilities and unidentified spilled liquids.
- 3.6.6 Move injured persons to a safe area and render First Aid if necessary. Request assistance, as needed, from the UHM Security by calling 956-6911. Notify Facilities or Security of any structural damage.
- 3.6.7 Outside of buildings and structures: REMAIN CALM AND DO NOT RUN. The safest place during an earthquake is in the open. Stay in the open away from buildings and large trees until the earthquake is over. Often large-scale earthquakes are followed by numerous small-scale earthquakes for an extended period of time.
- 3.6.8 Avoid touching fallen electrical wires and stay away from damaged utilities and unidentified spilled liquids.
- 3.6.10 In car or bus: REMAIN CALM. If possible, pull to the side of the road, away from any building and crouch or lie down in the vehicle.
- 3.6.11 On a mountain road, such as the Pali Highway, the side of the road may not be safe due to overhanging structures, large trees or boulders. The driver should determine if the terrain is safe before deciding to stop.

- 3.6.12 Stay away from fallen and/or exposed wires and damaged utilities and structures.
- 3.6.13 If parked and in a safe location, set brakes and turn off ignition. Wait until earthquake is over to resume driving or exiting from vehicle.
- 3.6.14 Walking to or from Campus: REMAIN CALM AND DO NOT RUN. The safest place during an earthquake is in the open. Look for and stay in the open until the earthquake is over.
- 3.6.15 Stay away from damaged utilities, structures, and fallen wires.
- 3.6.16 After the earthquake, if you are on the way to Manoa and closer to Manoa, continue to Manoa. If home is closer, proceed home. After the earthquake, if you are on the way home, continue home.

4.0 Technological Emergencies

4.1 Fire Alert Phase

- 4.1.1 The Biomedical Sciences Building is equipped with an automated fire alarm and sprinkler system, which will produce a fire alarm, should smoke or fire occur.
- 4.1.2 All University facilities have fire alarm stations located on every floor of every building and can be used to sound an alarm and alert occupants that a fire or smoke has occurred in that building.

4.2 Fire Event Phase

- 4.2.1 Activate the building fire alarm. This will immediately notify building occupants who should evacuate the building. Call Security at 956-6911 and provide the following information:
 - Name of caller and department.
 - Location and severity of the fire
 - Any known injuries.
- 4.2.2 Fight fire only if not life endangering and if an appropriate fire extinguisher for the type of fire is available.
- 4.2.3 In the event of a fire, never use the elevators. Exit through the stairwells.
- 4.2.4 AVS staff should meet in back of the delivery entrance that should conform with Fire and Evacuation procedure for Manoa. In the event that the wind is blowing a certain way, there is an alternate site in back of Biomed near the AVS storage containers.

4.3 Hazardous Materials

- 4.3.1 Hazardous materials include chemicals, gases, flammable liquids, radioactive substances and biological substances. Hazardous materials are used for normal operations, research or instruction. Should a spill, accident, inadvertent release or dumping of any hazardous materials occur at any University facility, immediate action is required.

- 4.3.2 Users of hazardous materials must follow all Federal, State and County regulations. Users must also read and understand the producer/manufacturer's instructions and have written instructions or procedures on the use and disposal of hazardous materials.
- 4.3.3 Written emergency plans for spills and accidents are required for all users of hazardous materials. These plans shall include actions required to insure safety of personnel and immediate notification of building/area occupants, EHSO, Security, and other State and Federal Agencies as required.
- 4.3.4 The AVS Program Manager or their designee in consultation with EHSO will evaluate to the back delivery area of Biomed, if necessary.
- 4.3.5 EHSO is responsible for determining whether building or area is safe to re-enter and will notify the senior person in charge, Campus Security and the EMT. Render first aid as necessary.

4.5 **Electricity and Water Utilities Outages**

- 4.4.1 Electricity and water utilities are essential to the operation of all campus facilities and any disruption will require immediate remediation by the Office of Facilities and Grounds. Prolonged outages in part or all of the campus will negatively affect students and personnel and may result in an emergency situation where classes and operations may be suspended. Outages or interruptions of gas and telecommunications services are usually not serious and usually can be rectified in a short period of time. Outages of this type will not result in suspension of classes or operations.

- 4.4.2 **Electrical Outage:** Report all electrical outages to the Facilities Management 956-7134, or the Security Office at 956-6911

Unplug all equipment that could be damaged by a power surge before electricity is restored. Turn off lights, appliances, window air conditioners and other devices to reduce the power requirements for restoration. Facilities will take action to turn off large electrical equipment at all the facilities on the Manoa campus.

Evacuate the building or facility if safety of personnel is a concern.

- 4.4.3 **Water Outage:** Report all water outages or pipe breaks to the Office of Facilities 956-7134. Facilities will send their maintenance personnel to investigate the problem and will fix any problem within their capability. Facilities will report major line breaks to the City and coordinate repairs with them.

Turn off all water faucets and taps. Conserve remaining water resources until restored. Facilities, through their Office of Building Services, may restrict the use of restrooms in affected buildings. Personnel will be directed to the closest building where restrooms are operational. Should the water outage affect large sections of the campus or the entire campus, classes and operations, except for essential workers, may be suspended.

- 4.4.4 **Telecommunications Outage:** Should both telephone and computers go down, contact the Office of Information and Technology Services via wireless connection or by cell phone at 956-8883.

If all forms of electronic communications are down, prepare to send messages via

personnel who are able to walk or drive from office to office.

4.5 Prolonged Power Outage General

4.5.1 In the event of a **prolonged power outage**, the Animal Lab Support Supervisor or their designee will direct the staff to monitor room temperatures periodically throughout the day. If the temperature elevations become life threatening (>85 degrees F), the employees will be instructed to open doors to animal rooms and corridors. If these measures do not suffice, then the **Program Manager** may instruct that animals be temporarily moved to another facility.

4.6 Prolonged power or Air Conditioning (AC) Outage Event Phase

4.6.1 In the event that auxiliary power is required, an emergency generator power should be procured as soon as possible in the event of a prolonged power outage (greater than 1 day). It is best to contract with a vendor that will add diesel fuel as needed and providing full service for the generators. During the 2004 flood AVS used Generators Hawaii (Tiny) at 832-1555. A 150 generator will service the Biomed tower, while a 40 generator will service 5th floor.

4.6.2 If the building is on emergency generator power, it is best for AVS to have a separate emergency generator to run its animal colony. Often the larger building generators go down for servicing for longer periods (up to 4 hours every 3 weeks) versus the smaller ones which go down for 40 minutes every 3 weeks. This also allows AVS to run independent of many problems that may occur with the building's power.

4.6.3 Ample three pronged extension cords should be available to connect the generators with their respective spider boxes.

4.6.4 If the building is on emergency generator power, it is best for AVS to have a separate emergency generator to run its animal colony. Often the larger building generators go down for servicing for longer periods (up to 4 hours every 3 weeks) versus the smaller ones, which go down for 40 minutes every 3 weeks. This also allows AVS to run independent of many problems that may occur with the building's power.

4.6.5 In prolonged outages, consultant electricians (A1-A electrician) at 839-2771 may be contracted to set up temporary circuits to run fluorescent lights and power outlets for refrigerator, freezers, portable ACs, and light timers. Any consultant work must be coordinated with Facilities.

4.6.6 If power is available, portable AC units can be procured. The placement of these is limited by the exhaust duct, which needs to be set near an exterior window. These units are ideal because they do not require regular water pan drainage. They do, however, need to be reset if the power is turned off even temporarily.

4.6.7 If possible, move perishable items such as produce, diagnostic specimens and reagents requiring refrigeration to areas where power is available. Some labs may use dry ice to keep these cool temporarily.

4.6.8 If freezers are not working, remove the non-hazardous carcasses for incineration disposal ASAP.

4.6.9 If at all possible, do not use halogen lights in an indoor facility that does not have

working AC. These lights will generate a great deal of heat and add to the heat load of the building. Fluorescent or incandescent light fixtures are preferred as they produce much less heat.

- 4.6.10 Floor fans will be placed in rooms and hallways to help circulate air in the event of an AC outage.
- 4.6.11 Doors to the animal rooms may be left open in the event of AC outage. See note on regulated species below.
(*The Guide for the Care and Use for Laboratory Animals* specifies the acceptable dry bulb room temperature ranges for each species housed at AVS)
- 4.6.12 Notify the **Operations Supervisor** immediately if the temperature range exceeds or drops below the acceptable ranges for each species. 68-79 degrees F is the acceptable range for rodents.
- 4.6.13 If there is no boiler for prolonged periods and the AC is still working, be sure to monitor the animal holding rooms every four hours throughout the day to ensure that the temperatures are not too hot or cold for the species. In the case of the 2004 flood, chilled water was throttled back to the animal colony AC until the boiler could be restored to reheat the air coming into the Biomed colony.

5.0 Recovery Phase for Type 2 and 3 Natural and Technological Emergencies

5.1 Actions

- 5.1.1 Coordinate all recovery efforts with the AVS **Program Manager** or designee. Keep him/her apprised of new problems, when problems are resolved, and when problems remain unresolved.
- 5.1.2 The AVS **Program Manager** will keep the Office of the Vice Chancellor and UH Emergency Planning Management Team in the loop about animal facilities concerns. They are our best advocates to safeguard the animal colony and its staff.
- 5.1.3 **AVS Program Manager** or designee will make a damage assessment and submit to the Designated Institutional Official as soon as possible. Photographs will be taken prior to damage clean up or repair. This is for insurance purposes in order to provide evidence for damaged property.
- 5.1.4 **AVS Program Manager** will communicate information from the UH Emergency Planning Management Team when it is safe to return to the facility and coordinate recovery phase activities with the staff.
- 5.1.5 The first priority is to check for injured or trapped individuals and assist them immediately by calling Security at 956-6911.
- 5.1.6 The second priority is to check for injured or trapped animals and ensure that they are cared for or disposed of in a humane manner. The Program Manager will report the final disposition of the animals to the principal investigator in a timely manner.
- 5.1.7 Rooms housing regulated species such as listed below, the AVS **Program Manager** will contact the following specialist for approval, **BEFORE** making modifications to Plant

Quarantine Branch permit requirements for housing these species.
Land Vertebrate Specialist 808-832-0579.

6.0 Deliberate Human Acts of Destruction

6.1 Prevention

- 6.1.1 Prevention is the key in cases of deliberate human acts of destruction.
- 6.1.2 Refer all public inquiries regarding animal use activities to the Program Manager. Do not divulge sensitive information. Reporter inquiries may also be directed to Communications Office, [REDACTED]
- 6.1.3 Do not allow photographing of the interior of the facilities without prior approval from administration.
- 6.1.4 Report any suspicious persons or activities in or around the facilities to the Program Manager and security. Security Office can be reached at 956-6911.
- 6.1.5 Do not share security gate codes. Do not allow unauthorized tailgaters to follow you into the facilities.
- 6.1.6 Report any threatening phone calls to the Program Manager and security.
- 6.1.7 Keep abreast of animal rights activities and issues around the country and the world.
- 6.1.8 Always have the phone numbers for security and emergency posted prominently in each facility.

7.0 Pandemics as Avian Flu or Inadvertent Escape of Agents into the Environment

This section has been developed in conjunction with subject matter experts and PIs involved in these projects.

7.1 General Information

- 7.1.1 Biological outbreak can be caused by natural occurrence or accidental release of biologic agents, introduced viruses and diseases brought into Hawaii via humans or animals and through bioterrorism which is the intentional release of biologic agents that can cause illness and death. The State has a plan for biological outbreak and the University is an integral part of the State's Plan to combat any type of biological outbreak.
- 7.1.2 The greatest operational issue in a pandemic type event will be the effects on absenteeism. An influenza pandemic could last from 18 months to several years with at least two peak waves of activity. In an affected community, a pandemic wave will last about 6 to 8 weeks.
- 7.1.3 Those animal care staff deemed essential workers will be tasked to maintain critical and essential functions for the care of the animals at vivarium at Manoa. Staff shall remain in communication with the AVS Program Manager through emails and through phone, as to their work schedules at Manoa and to their own health status.

- 7.1.4 In the case of a pandemic, social isolation of people will be the principal means of disease control until vaccinations are available.
- 7.1.5 Those essential workers will wear appropriate personal protective equipment to protect themselves, others, and the animals under their charge from potential infection in the work environment. Those who are sick or with respiratory infection symptoms should stay at home.
- 7.1.6 Long term planning for animal care and operations of the vivarium will be based on the length of the pandemic, the availability of care staff, and the research that will be deemed essential to be maintained during the outbreak.
- 7.1.7 If animal welfare becomes an issue due to lack of adequate care staff and/or resources, the Veterinarian may recommend euthanasia of animals. They will make every attempt to consult with the affected PIs prior to pursuing this course of action.

7.2 **Biological Outbreak Alert Phase**

- 7.2.1 Federal and State agencies will issue advisories and warnings of biological outbreak in the United States and in Hawaii. Advisories and warnings are issued via the media.
- 7.2.2 Should any local biological outbreaks occur that affects the UHM Community, the University Health Services Manoa (UHSM) Office will issue an advisory or warning via their website, the EMT, and the Director of Communications.

7.3 **Biological Outbreak Event Phase**

- 7.3.1 When the University Community is affected, Vice Chancellors will notify all students and employees of the advisories and warnings. If the accidental release of biologics occurs from a specific campus, the emergency point of contact for that campus will report the incident to UH Manoa Administration.
- 7.3.2 All students and employees should take the necessary precautions and actions advised by UHSM, State Health Department, and Federal Health agencies. This may include isolation or quarantine orders.
- 7.3.3 If infected, go to Straub Medical Center (Beretania Street) or your medical care giver. Report all cases and incidences of contact with the various types of biological outbreak to the appropriate State Health agency as instructed in advisories.

7.4 **Escape or Inadvertent Release of Animals from the Vivarium**

- 7.4.1 Escape or inadvertent release of animals will be reported immediately to the Operations Supervisor.
- 7.4.2 Live or snap traps may be set up around the facility.
- 7.4.3 Depending on the circumstances surrounding the release or escape, the Program Manager will report the event to the appropriate authorities.

8.0 **Medical Emergencies**

8.1 General Information

- 8.1.1 Responses to non-life threatening, medical incidents for AVS staff and other vivarium personnel are discussed the AVS Occupational Health and Safety Program.
- 8.1.2 Life-threatening medical emergencies, such as heart attack, stroke, or loss of consciousness, require activation of the AVS Emergency Response Plan. These incidents may occur in the animal facility during regular or off-hours.

8.2 Alert Phase

- 8.2.1 The first priority is to check the injured or ill individual and assist them immediately by calling campus security at 956-6911.
- 8.2.2 Inform the security guards of the individual's condition and location so that they can contact 911 for help from first responders. If known, explain what occurred and if the individual was working with anything hazardous.
- 8.2.3 Stay with the individual until help arrives. Contact the AVS Program Manager to inform him/her of the situation. If he/she cannot be reached, contact the Operations Supervisor.

8.3 Event Phase

- 8.3.1 The building and animal facility are secured. First responders must be escorted by security through the building to reach the individual.
- 8.3.2 First responders should be advised to wear gloves when handling the affected individual until more is known about what the individual may have been working with. Gloves are available upon entry of each animal area.

9.0 Reporting Emergencies

The AVS **Program Manager** will report to the UH IACUC and Compliance Office, about emergencies affecting the well-being of the animals. The **Compliance Office** will report to the National Institutes of Health Office of Laboratory Animal Welfare, National Science Foundation, or applicable federal funding agency.

Refer all public inquiries regarding animal use activities to the Program Manager. Do not divulge sensitive information. Reporter inquiries may also be directed to Communications Office, [REDACTED]

Additional Information

Oahu Civil Defense Agency lists the following shelters for Punchbowl – Waialae Vicinity
Tsunamis: Anuenue Complex, Kahala Elementary School (ES), Jefferson Elem, McKinley High School (HS), Waikiki ES. **Hurricanes:** Aliiolani ES, Anuenue Complex, Hokolani ES, Jefferson ES, Kaahumanu ES, Kaimuki HS, Kaimuki Middle School (MS), Kuhio ES, Liholiho ES, Liliuokalani ES, Manoa ES, McKinley HS, Neal Blaisdell Center, Noelani ES, Palolo ES, Roosevelt HS, Stevenson MS, Waialae ES, Waikiki ES, Washington MS, Wilson ES.

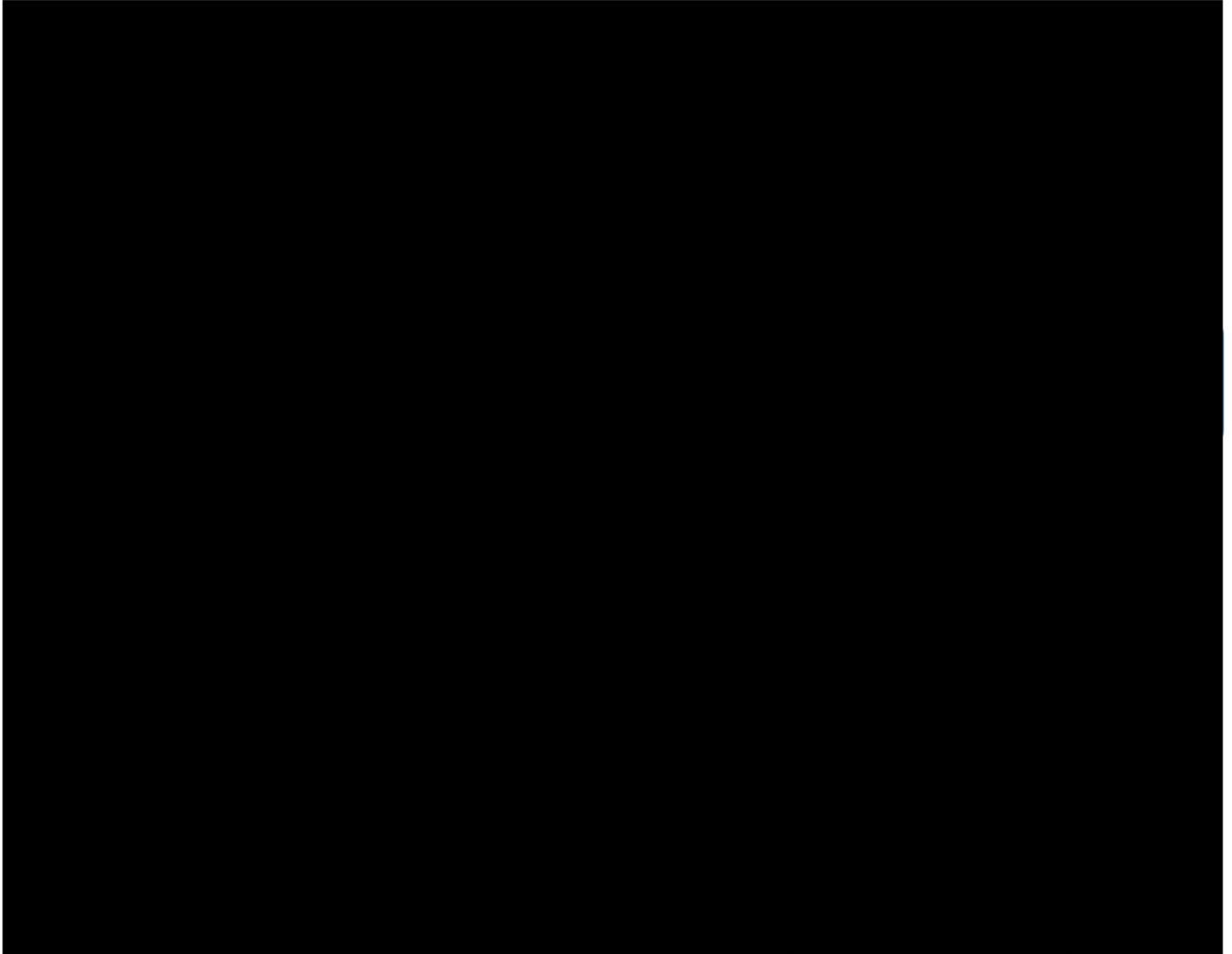
See

Appendix A AVS Emergency Contact Tree Type 2 and 3 Biosafety Emergencies at Manoa
 Appendix B AVS Emergency Contact Tree Type 2 and 3 Chemical Emergencies at Manoa
 Appendix C AVS Emergency Gathering location at Manoa

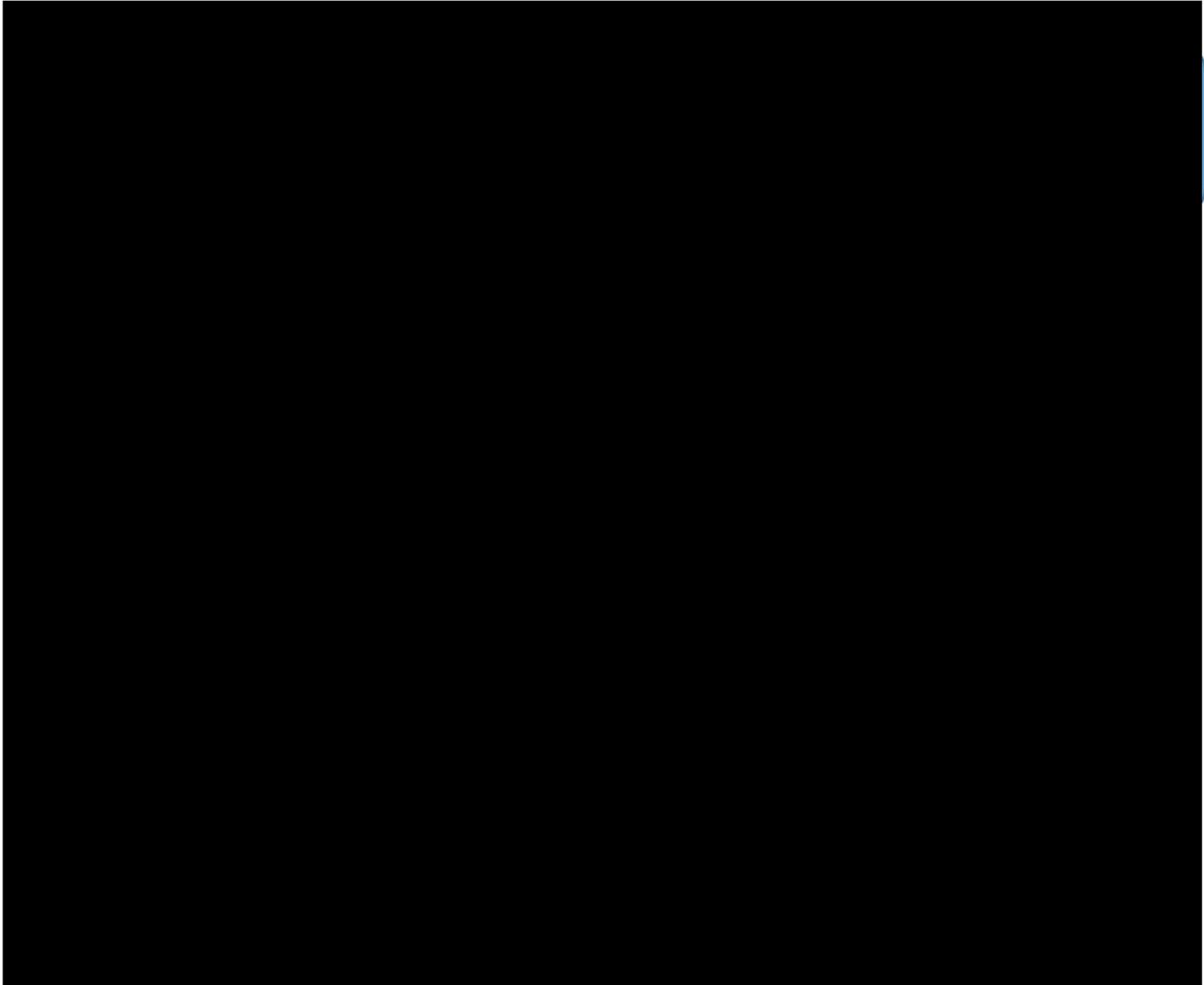
Notes for Emergency Contact tree below:

- Home phone numbers for AVS staff will be kept confidential by AVS management staff.
- [REDACTED] will be the point of contact for Biosafety related emergencies.
- [REDACTED] will be the point of contact for chemical related emergencies.
- For medical emergencies call 9-911 (from a Manoa landline) or X911 (from a non-Manoa line).

APPENDIX A
AVS EMERGENCY CONTACT TREE
TYPE 2 AND 3 BIOSAFETY EMERGENCIES AT MANOA (REVISED 7//29/16)



**APPENDIX B
AVS EMERGENCY CONTACT TREE
TYPE 2 AND 3 CHEMICAL EMERGENCIES AT MANOA (REVISED 7/29/16)**





Meet Here

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RESEARCH

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**EMERGENCY OPERATIONS PLAN
ANIMAL & VETERINARY SERVICES AT KAKA'AKO**

| | | |
|--|-------------------------|--|
| Date First Issued: 2/12/07 | Authored by: ██████████ | Approved by IACUC: 5/17/07, 5/20/10, 9/19/13 |
| Revised: 4/25/08, 1/27/09, 5/1/09, 5/20/10, 11/1/12, 9/6/13, 4/11/14, 6/15/15, 11/18/15, 7/29/16, 1/11/19, 3/25/20 | | |

The following plan was written in conjunction with information from the University of Hawaii at Manoa (UHM) Comprehensive Emergency Management Program (<https://manoa.hawaii.edu/dps/PDFs/UHMCCEMP.pdf>) and JABSOM Environmental Health and Safety Office (www.jabsom.hawaii.edu), UH Animal Welfare and Biosafety Programs, National Weather Service (<https://www.weather.gov>) the Pacific Tsunami Warning Center, UC Davis Influenza Emergency Response Plan, and the Federal Emergency Management Agency (FEMA) (www.fema.gov). Centers for Disease Control <https://www.cdc.gov> The Hawaii State Department of Health <https://health.hawaii.gov> The plan is designed for AVS at Kaka'ako to be self-sufficient for up to 3 days (72 hours) in the event of a disaster, and to protect the environment and public from inadvertent release of hazardous agents.

HAZARD ASSESSMENT FOR AVS

| Hazard Category | Examples |
|---|---|
| Natural | Hurricane, tsunami, earthquake |
| Flood | Plumbing failure, water leak |
| Technological | Systems failure, structural failure |
| Fire | |
| Civil | Deliberate human acts of destruction |
| Pandemic and Inadvertent Release of Pathogens | Avian Influenza, COVID-19 |
| Medical Emergency | Life Threatening, heart attack, loss of consciousness |

GENERAL INSTRUCTIONS

1.1 Emergency Preparedness

- 1.2 Review the AVS emergency/disaster response plan and update it accordingly before an emergency situation occurs.
- 1.3 Ensure emergency contact list of individuals associated with AVS is saved securely and may be remotely accessed by everyone in AVS. Include home and cell phone numbers.
- 1.4 Test the phone tree or email group to facilitate emergency communication amongst individuals in AVS. The UH Biosafety program recommends initiating a buddy system.
- 1.5 Train the AVS staff on the most current Emergency/Disaster Response Plan. Post is so everyone who needs to know may access it remotely.

2.0 **Emergency Classifications** (UH Manoa Comprehensive Emergency Management Plan, September 6, 2018)

2.1 **Type 1** (Routine Emergency Response)

- 2.1.1 A Type 1 minor incident is localized or in a small area. It can be quickly resolved with existing JABSOM resources or limited outside help. A Type 1 incident has little or no impact on personnel or normal operations outside the locally affected area.
- 2.1.2 Type 1 incidents do not require activation of the UHM Emergency Response Plan (ERP). Impacted personnel, departments or offices coordinate directly with operational personnel from the JABSOM EHSO, Security and the Facilities Management Office to resolve Type 1 incidents. In certain incidents, the JABSOM Executive Management Team and Emergency Response Group, including the Director of Communications/Public Affairs Officer, will be asked to get involved.
- 2.1.3 Examples: Odor complaints; localized chemical spill; plumbing failure or water leak.

2.2 **Type 2** (Multiple or Expanded Emergency Response)

- 2.2.1 A Type 2 emergency disrupts sizable portions of JABSOM Kaka'ako. Type 2 emergencies require assistance from external organizations. These events can escalate quickly and have serious consequences for mission-critical functions and/or life and safety.
- 2.2.2 The JABSOM Executive Management Team, Manoa Emergency Management Team, the President of the University of Hawai'i, and State Civil Defense may be alerted depending on the nature and severity of the emergency.
- 2.2.3 The Manoa Emergency Management Team (EMT) Executive (Provost) or an authorized representative receives intelligence from responding operational departments and determines whether the ERP and Emergency Response Center (ERC) should be activated.
- 2.2.4 Examples: Building fire or explosion, biological or terrorist threat, major chemical or hazardous material spill, severe windstorm or flooding, and extensive utility outage. Also includes external emergencies that may affect Kaka'ako personnel or operations.

2.3 **Type 3** (Disaster)

- 2.3.1 A Type 3 disaster involves a large part of JABSOM at Kaka'ako and its surrounding community. Normal operations are curtailed or suspended. The effects of the disaster are wide-ranging and complex. A timely resolution of disaster conditions requires Campus-wide (JABSOM and UHM) cooperation and extensive coordination and support from external jurisdictions.
- 2.3.2 The UHM Provost is notified and the UHM ERP and ERC are activated. (State Civil Defense is notified and communications opened. JABSOM EMT/ERG and Manoa EMT members and other key personnel are alerted to report to Campus and the Campus Emergency Response Teams (CERTs) are activated and engaged in the Campus emergency response. Operations and Finance units activate plans to respond with facilities personnel and resources and provide the necessary financial, contracting and claims support. Plans and Logistics units activate plans to provide intelligence, record keeping and distribute material and equipment and assign personnel where needed. The Manoa EMT Executive activates the Public Information Plan and requests support from the System Joint Information Office.)

2.3.3 The President is notified and the System EMP and Emergency Operations Center (EOC) may be activated. System EMT members may be alerted to report to Campus.

- 3.0 Communications:** The type of emergency will dictate the degree to which the emergency contact tree is activated, as well as the action plan.
- 3.1 **Type I (Routine Emergency)** is usually reported to the AVS Senior Staff, who then works with the Operations Supervisor to resolve problem. Depending on the situation, JABSOM EHSO (for chemical emergencies), Biosafety Office (for biosafety emergencies), or Facilities may be notified. The incident is reported to the Director.
- 3.2 **Type 2 (Multiple or Expanded Emergency) and Type 3 (Disaster) - The Emergency Phone Tree is activated (see below).** The AVS Program Manager or designee is the emergency point of contact for AVS, receiving reports of an impending emergency, and communicating with JABSOM and UH Administration. The AVS Program Manager contacts the Operations Supervisor, Veterinarian, and Office of the Vice President for Research and Innovation via the Director for Research Compliance. JABSOM EHSO (for chemical emergencies), Biosafety Office (for biosafety emergencies), and Principal Investigator (if affected) may be contacted.
- 3.3 Phone rosters of all AVS employees are maintained in a confidential manner by the Senior Staff, Operations Supervisor, AVS Program Manager, and Staff Veterinarian. The Operations Supervisor will contact the Senior Staff. The Senior Staff will alert animal care staff at Kaka'ako about the emergency, and instruct them on whether to report for duty, if the alert occurs outside of normal business hours.
- 3.4 Responders for the Animal Biosafety Level 3 (ABSL3) will include:
- JBF Director, [REDACTED];
 - Biosafety Office: [REDACTED];
 - Facilities: [REDACTED];
 - AVS Program Manager, [REDACTED];
 - AVS Operations Supervisor: [REDACTED];
 - Veterinarians: [REDACTED]
- The AVS Program Manager will remain in contact with the PIs during an emergency, and will communicate information to the AVS local responders. The AVS Program Manager will keep a confidential phone roster of the responders for the ABSL3.
- 3.5 An emergency phone roster is posted prominently throughout the facility for easy reference during an emergency. Emergency contact numbers for the AVS Program Manager, Operations Supervisor, Senior Staff, Veterinarians, Security, JABSOM EHSO, Biosafety Office, Facilities, 911, and Straub Medical Clinic will be posted.
- 3.6 For **reportable** type 1-3 emergencies/incidents involving vertebrate animals used for research, teaching, testing, the AVS Program Manager shall file a report with the Animal Welfare Office within 48 hours.
- 3.7 For **non-reportable** type 1-3 emergencies/incidents involving vertebrate animals used for research, teaching, testing, the AVS Program Manager will inform the Animal Welfare Program and the UH Institutional Animal Care and Use Committee (IACUC) at the next convened IACUC meeting.
- 3.8 AVS Emergency Contact Tree for Type 2 and 3 *Biosafety* Emergencies – refer to Appendix A.
- 3.9 AVS Emergency Contact Tree for Type 2 and 3 *Chemical* Emergencies – refer to Appendix B.
- 3.10 Staff will listen to the radios (battery operated capabilities) for the *ALL CLEAR* from State Civil Defense.

The same message should be available on all channels. Battery operated radios (along with spare batteries to last up to 3 days) will be situated in the staff break room 123.

- 3.11 Identify all non-critical activities that can be ramped down, curtailed, suspended or delayed. Identify essential activities and the minimum frequency that they must be done.
- 3.12 In an emergency, all FTE employees may be considered essential during the watch and/or warning periods. Consideration will be given to employees who take public transportation, if public transportation is shut down; or who have dependents such as young children or elderly or infirmed family member in their care. The AVS Program Manager or designee will pre-determine a team of at least two essential workers from AVS in the event of an impending emergency. During an emergency, the first tier of essential workers includes the Operations Supervisor and the Senior Staff. As additional help is required, the second tier of essential workers includes the UH Administrative and Professional Research Support (APT RS) position, followed by RCUH staff, and UH animal care students. If circumstances prevent the **RCUH employee** from reporting to their normal workplace, the AVS Program Manager will have the staff placed on vacation status if an alternative workplace is not available during the unforeseen disruption in work schedule (RCUH Policy 3.262). If circumstances prevent the **UH APT RS** position from reporting to their normal workplace, and an alternative workplace is not available, the employee will receive guidance from UH administration whether or not administrative leave will be granted or not during the unforeseen disruption in work schedule. The AVS Program Manager will work closely with the Operations Supervisor, and will review emergency roles with each employee. The employees will be instructed to contact the Operations Supervisor if they have any questions regarding their work status/schedules.
- 3.13 The AVS Program Manager or designee may assign essential staff, usually a team of two persons at Kaka'ako, to provide essential animal care for the facility during the alert (watch) and warning phase of the disaster. In many cases, the AVS Program Manager will instruct that no person should be in the building during the warning and actual event phase. NOTE: Prior to or during a Warning Phase, the JABSOM Dean may require the buildings be evacuated and locked down. Furthermore, the C&C of Honolulu Police Department and/or Fire Department may require evacuation of the entire Kaka'ako area.
- 3.14 The staff member who is at work during the event, should carry his/her cell phone in order to facilitate communication.
- 3.15 Before leaving the facility, all employees should contact the Operations Supervisor, to ensure that no one is left in the facility inadvertently and to review emergency roles for the next day.
- 3.16 In the event of prolonged power outages, cellular phones or similar methods of communication will be provided by AVS for essential staff.
- 3.17 The AVS Program Manager will interface with JABSOM administrations on building/operations shutdowns.
- 3.18 In the case of Pandemics, AVS will request to be notified by JABSOM, UH CC, and other PIs, to identify individuals working with animals in the vivariums who are under self-quarantine (see section 8.0 Pandemics). These individuals will have their access to the vivarium temporarily restricted.
- 3.19 In the event of a campus shutdown, the AVS Program Manager will coordinate access with JABSOM administrative to allow for essential workers to enter the Kakaako Biosciences Building for access to the vivarium.
- 3.20 Should facility's support services be affected, e.g. availability of boiler operations, the Operations Supervisor may modify staff work schedules based on the availability of these services.

4.0 Natural Disasters

4.1 Hurricanes Alert Phase

- 4.1.1 National Weather Service can usually forecast high winds, heavy rain, flooding, damaging surf and hurricanes with a high degree of accuracy.
- 4.1.2 A Hurricane Watch means that hurricane conditions are possible within 36 hours. During a watch, listen to radio and television (TV) broadcasts and check the University of Hawai'i Website.
- 4.1.3 A Hurricane Warning is issued when sustained winds of 74 mph or higher associated with a hurricane is expected within 24 hours. County Civil Defense sirens will sound. Continue to listen to radio and TV broadcasts and check the University of Hawai'i Website.
- 4.1.4 Hurricanes also produce coastal flooding. Therefore, all should plan for and be prepared to respond to coastal flooding as described in the Action Plan for Tsunami and Coastal Flooding.

4.2 Hurricanes Event Phase

- 4.2.1 If time and conditions permit, the University will convene its EMT and issue instructions via local radio, TV, email and telephone tree on whether classes and/or work schedules will be suspended. Designated and essential employees may be asked to report to their work site to implement emergency preparation and emergency/security duties.
- 4.2.2 In most cases, rodents and other small mammals will be secured and provided food and water sufficient to last 5 days before employees leave the facility.
- 4.2.3 Supplies of non-perishable food and bedding sufficient to last at least a week should be moved from the food storage areas to the corridors or rooms closest to the animals.
- 4.2.4 Water should be collected in spare water bottles and stored in the clean cage wash room. Filled reverse-Osmosis (RO) carboys will also provide several days of water for the facility. Reserve water supplies should be sufficient to last at least 5 days for maintenance of all animals in the facility. Water should be rationed first for maintenance of life and then used to maintain a healthy primary environment for the animals.
- 4.2.5 Carcass freezers with potentially hazardous carcasses inside are to be hooked up to emergency power. Absorbent socks are to be placed around them to contain any leakage in the event of a power loss. The freezer is to be labeled with the types of hazards present as well as with contact information of individuals who can describe the contents of the freezer. All known, hazard carcasses are disposed of via alkaline hydrolysis.
- 4.2.6 Flashlights and a supply of batteries to last up to three days should be placed in readily accessible areas. Flashlights and lanterns with fluorescent bulbs appear to provide better illumination. Non-battery operated crank type flashlights should also be kept on hand. Along with flashlights and batteries, a first aid kit, bottled water, non-perishable human food supplies, and port-a-potty should be kept in cupboards in the Kaka'ako staff break room [REDACTED].
- 4.2.7 Animal records should be secured in waterproof wrapping or box in an appropriate place to prevent damage or loss. The Operations Supervisor will ensure remote back up of Edstrom and Topaz/Granite electronic data is secured.

- 4.2.8 All animals in the ABSL3 may be humanely euthanized by the PI, based on the professional judgment of the Veterinarian, and rodent carcasses placed in Isocages®, which are hermetically sealed, labeled with the hazard, and placed in the sealed autoclave. In the event that there is no time to perform humane euthanasia, and the Veterinarian deems it necessary to euthanize the animals, the cages will be left sealed on the racks.
- 4.2.9 ABSL2 and hazardous, chemically treated animals in HEPA filtered (Seal Safe®) ventilated cages shall be moved to the upper rows of the racks.
- 4.2.10 All potentially hazardous trash shall be collected and autoclaved. Chemical hazard waste bins inside the facility are moved off the floor and into the Biosafety cabinets. Large chemical waste storage drums are moved off the floor and onto the carcass freezers.
- 4.2.11 All large cage wash equipment shall be powered down and computers unplugged.
- 4.2.12 Sand bags, provided by JABSOM facilities staff, are placed in front of the vivarium, rollup, loading dock door.
- 4.2.13 During an evacuation, the Operations Supervisor should be in contact with all employees to ensure that no one is left in the facility inadvertently and to assign emergency roles for the next day.
- 4.2.14 If severe winds or a flood watch occurs while class is in session, employees or visitors are on site, the following Emergency Actions should be followed: Seek shelter in designated buildings on Campus. A list of designated buildings with the specific rooms and areas that can be used will be made available after shelter surveys and requirements are completed in 2006. If a designated shelter is not available or shelter locations are unknown, students, staff and visitors should go to a designated County Civil Defense shelter. In the case of hurricanes or high winds where no known shelters are available, seek shelter in a large building and stay away from windows and exterior doors.
- 4.2.15 In the case of possible flooding, leave basements or low lying buildings and go to designated shelters or to the upper floors for shelter. Do not seek shelter in basements of buildings unless it has been designated as a shelter.
- 4.2.16 Persons responsible for buildings, classrooms or laboratories shall ensure that all handicapped persons have been assisted to reach a shelter or cover.
- 4.2.17 Avoid gymnasiums and other structures with large roof spans. If in a best available building instead of a designated shelter, evacuate rooms subject to full force wind and remain near an inside wall away from windows. Close all windows and blinds.
- 4.2.18 Keep tuned to a local Emergency Alert System (EAS) radio station for the latest advisories.
- 4.2.19 Following a hurricane, there can be prolonged power outages, addressed below under Electricity and Water Utilities Outages on pages 14-15.

4.3 Tsunamis or Coastal Flooding Alert Phase

- 4.3.1 The island of Oahu is highly susceptible to tsunami and coastal flooding as these events have occurred many times in the past. However, the JABSOM at Kaka'ako campus is outside of the current NOAA inundation zone, as described by the Pacific Disaster Center (<http://static.pdc.org/tsunami/index.html>). However, coastal flooding may be associated with hurricanes, high surf and severe storms.

- 4.3.2 Tsunami Watch: Pacific Tsunami Warning Center (PTWC) has determined the earthquake may very likely have created a tsunami and is advising parties to be alert as PTWC awaits tide data to support tsunami generation.
- 4.3.3 Tsunami Warning: PTWC finds conditions serious enough to issue immediate concern to parts of the Pacific. The message will include approximate arrival times for various parts of the Pacific.
- 4.3.4 **Pacific-wide tsunami warning** bulletin is issued by PTWC after confirmation has been received that a tsunami has been generated in the Pacific that has caused damage, or has the potential to cause damage, at distances greater than 1,000 km (625 miles) from the epicenter, and thus poses a widespread threat to any populated coastal area within the Pacific Basin.
- 4.3.5 A **regional tsunami warning** bulletin is a tsunami warning issued initially to coastal areas near the earthquake epicenter. It is usually based only on seismic information without tsunami confirmation, and is initially issued as a means of providing the earliest possible alert of a potentially destructive tsunami to the population near the epicenter of a potentially tsunamigenic earthquake. Areas in a regional tsunami warning are generally less than three hours from the estimated tsunami arrival time. A list of estimated arrival times for warning areas is provided in the bulletin. This condition implies that all coastal areas in the region should be prepared for imminent flooding.
- 4.3.6 **Urgent Local Tsunami Warning.** An urgent local tsunami warning is a tsunami warning issued by the PTWC to Hawaii for tsunamis generated in Hawaiian coastal waters. It may be based only on seismic information without tsunami confirmation, or on a combination of seismic and sea level data, and is issued as a means of providing the earliest possible alert of a potentially destructive local tsunami. Areas in an urgent local tsunami warning may have only minutes before tsunami waves arrive, so urgent action is required to save lives.
- 4.3.7 A local earthquake of high magnitude in the Hawaiian area may generate a tsunami where no warning is provided. The Pacific Tsunami Warning Center on O'ahu provides the initial warning to the public via State and County Civil Defense Agencies and their EAS radio and television stations.
- 4.3.8 When a Tsunami Warning is issued, the County Civil Defense Agency will sound emergency sirens. The EAS will carry official tsunami advisories and provide shoreline evacuation instructions.
- 4.3.9 Coastal flood and storm surge warnings associated with hurricanes may be issued by the National Weather Service (<http://www.nws.noaa.gov/alerts/hi.html>).

4.4 Tsunamis or Coastal Flooding Event Phase

- 4.4.1 **Tsunami** - The estimated time of arrival will dictate the course of action to be taken. The person in charge at the affected facility shall initiate the following emergency actions:
- Coastal Flooding** – The magnitude and location of possible tsunami, storm surges or hurricanes that result in coastal flooding will dictate the course of action to be taken. The person in charge at the affected facility shall initiate emergency actions.
- 4.4.2 For facilities on the shoreline or low-lying coastal areas – If the ground shakes or the ocean suddenly withdraws or surges inland unusually, move to high ground immediately. Do not delay egress to listen to radio, TV or EMT instructions. In the event of a tsunami or flood, in which

there is no time to exit the building, all AVS employees should meet in the **mechanical penthouse near the HEPA filter banks**.

- 4.4.3 The UH Manoa Emergency Management Program may order alert warning and/or evacuation of John A. Burns School of Medicine.
- 4.4.4 In most cases, when advanced notice is given, rodents and other small mammals will be secured and provided with food and water sufficient for five days before employees leave the facility.
- 4.4.5 Animal records should be secured in waterproof wrapping or box in an appropriate place in the mechanical penthouse to prevent damage or loss.
- 4.4.6 Supplies of non-perishable food and bedding sufficient to last at least a week should be moved from the food storage areas to a designated area in the mechanical penthouse closest to the animals. Water should be collected in spare water bottles and stored. Filled reverse-Osmosis (RO) carboys will also provide several days of water for the facility. Reserve water supplies should be sufficient to last at least 5 days for maintenance of all animals in the facility. Water should be rationed first for maintenance of life and then used to maintain a healthy primary environment for the animals.
- 4.4.7 Carcass freezers with potentially hazardous carcasses inside are to be hooked up to emergency power. Absorbent socks are to be placed around them to contain any leakage in the event of a power loss. The freezer is to be labeled with the types of hazards present as well as with contact information of individuals who can describe the contents of the freezer. All known, hazard carcasses are disposed of via alkaline hydrolysis.
- 4.4.8 Sufficient numbers of flashlights should be placed in readily accessible areas and sufficient supplies of batteries to use for up to three days. Flashlights and lanterns with fluorescent bulbs appear to provide better illumination. Non-battery operated crank type flashlights should also be kept on hand. In addition a first aid kit, bottled water, non-perishable human food supplies, and port-a-potty, along with flashlights, should be moved from the Staff break room 123 to the designated area in the mechanical penthouse.
- 4.4.9 All rodents in the ABSL3 will be left in Isocages®, which are hermetically sealed, and the cages left sealed on the rack, with at sufficient amounts of food and water.
- 4.4.10 ABSL2 and hazardous, chemically treated animals in HEPA filtered (Seal Safe®) ventilated cages shall be moved to the upper rows of the racks.
- 4.4.11 All potentially hazardous trash shall be collected and autoclaved. Chemical hazard waste bins inside the facility are moved off the floor and into the Biosafety cabinets. Large chemical waste storage drums are moved off the floor and onto the carcass freezers.
- 4.4.12 All large cage wash equipment shall be powered down and computers unplugged.
- 4.4.13 Sand bags, provided by JABSOM facilities staff, are placed in front of the vivarium, rollup, loading dock door.
- 4.4.14 The Operations Supervisor will ensure remote back up of Edstrom electronic data is secured.
- 4.4.15 During an evacuation, the Operations Supervisor should be in contact with all employees to ensure that no one is left in the facility inadvertently and to assign emergency roles for the next day.

4.5 Earthquakes Alert Phase

- 4.5.1 In the event of an earthquake, safety for humans is of the utmost importance. Refer to UHM Action Plan for Earthquakes. It is safest practices the “Drop, cover and hold” maneuver under a sturdy piece of furniture. If indoors, stay there, drop to the floor, get under a desk or table or stand a corner. If outdoors, get to an open area away from trees, buildings, buildings and power lines. If in a high-rise building, stay away from windows and outside walls, stay out of elevators and get under a table. If driving, pull over, avoid overpasses and power lines, and stay inside your car.
- 4.5.2 Earthquakes are unpredictable and strike without warning. Damage to buildings, structures and infrastructure can range from negligible to severe depending on the magnitude of the earthquake. Possible severe outcomes of an earthquake are a tsunami, wave damage, coastal flooding and fires.
- 4.5.3 Earthquake Warnings: Since earthquakes are unpredictable, warnings are not usually given. Earthquake advisories may be provided by State and County Civil Defense Agencies due to increased seismic activity.

4.6 Earthquake Event Phase

- 4.6.1 Building occupants shall stand against the wall away from windows or get under desks or tables. Special attention shall be given for the safety of handicapped persons. Avoid glass and falling objects by moving away from windows or large panes of glass and from under suspended light fixtures or objects such as artwork or wall hangings.
- 4.6.2 Implement local emergency plan to EVACUATE THE BUILDING when instructed to or when the earthquake is over. EVACUATE to a pre-designated open area to assemble and conduct an accountability check. DO NOT BLINDLY RUN OUTSIDE as parts of the building may still be falling. Move to a clear area away from the building and large trees.
- 4.6.3 DO NOT RETURN to any building for any reason until the building is declared safe. Subsequent shocks may follow initial tremor.
- 4.6.4 Put out all flames or fires. Do not light any fires after quake has hit.
- 4.6.5 Avoid touching fallen electrical wires and stay away from damaged utilities and unidentified spilled liquids.
- 4.6.6 Move injured persons to a safe area and render First Aid if necessary. Request assistance, as needed, from the JABSOM Security by calling 692-1911. Notify Facilities or Security of any structural damage.
- 4.6.7 Outside of buildings and structures: REMAIN CALM AND DO NOT RUN. The safest place during an earthquake is in the open. Stay in the open away from buildings and large trees until the earthquake is over. Often large-scale earthquakes are followed by numerous small-scale earthquakes for an extended period of time.
- 4.6.8 Avoid touching fallen electrical wires and stay away from damaged utilities and unidentified spilled liquids.
- 4.6.9 In car or bus: REMAIN CALM. If possible, pull to the side of the road, away from any building and crouch or lie down in the vehicle.
- 4.6.10 On a mountain road, such as the Pali Highway, the side of the road may not be safe due

to overhanging structures, large trees or boulders. The driver should determine if the terrain is safe before deciding to stop.

4.6.11 Stay away from fallen and/or exposed wires and damaged utilities and structures.

4.6.12 If parked and in a safe location, set brakes and turn off ignition. Wait until earthquake is over to resume driving or exiting from vehicle.

4.6.13 Walking to or from Campus: REMAIN CALM AND DO NOT RUN. The safest place during an earthquake is in the open. Look for and stay in the open until the earthquake is over.

4.6.14 Stay away from damaged utilities, structures, and fallen wires.

4.6.15 After the earthquake, if you are on the way to Kaka'ako and closer to Kaka'ako, continue to Kaka'ako. If home is closer, proceed home. After the earthquake, if you are on the way home, continue home.

4.7 Water Spouts Alert Phase

4.7.1 A waterspout is a tornado-like whirlwind occurring over water that can move inland near the body of water where it occurs. The whirling wind and water in a waterspout can reach high speeds and cause severe damage. University facilities and vessels at or near the ocean are subject to damage from waterspouts.

4.7.2 Since waterspouts cannot be predicted, warnings can only occur after a waterspout is sighted. Once sighted, Coast Guard, State and County Civil Defense Agencies should be notified. These agencies will take the necessary actions to provide warnings and keep the public informed via radio and TV.

4.8 Water Spouts Event Phase

4.8.1 Affected University facilities and vessels should take the necessary actions to plan for and prepare emergency procedures for waterspouts.

4.8.2 Report waterspout sightings and/or damage to the Coast Guard, State and County Civil Defense Agencies.

4.8.3 If a waterspout is reported in your area, take the necessary actions to close windows, doors, portholes and hatches. Remove or secure loose equipment and material at exterior and outside areas.

4.8.4 Remain inside vessels at sea or take shelter in the best available building on shore. Evacuation may be necessary depending on the severity of the waterspout and the availability of shelters on site. Take the same precautions within buildings as with hurricanes and high winds.

4.9 Local Flooding in the ABSL3

4.9.1 In the event of a flood originating from the ABSL3, dilute bleach should be added to the water to destroy potential pathogens escaping from the suite.

4.9.2 Contact the AVS Program Manager, Facilities Emergency Contact, JABSOM EHSO, and the ABSL3 local responders immediately.

5.0 Hazardous Materials

- 5.1 Hazardous materials include chemicals, gases, flammable liquids, radioactive substances and biological substances. Hazardous materials are used for normal operations, research or instruction. Should a spill, accident, inadvertent release or dumping of any hazardous materials occur at any University facility, immediate action is required.
- 5.2 Users of hazardous materials must follow all Federal, State and County regulations. Users must also read and understand the producer/manufacturer's instructions and have written instructions or procedures on the use and disposal of hazardous materials.
- 5.3 Written emergency plans for spills and accidents are required for all users of hazardous materials. These plans shall include actions required to insure safety of personnel and immediate notification of building/area occupants, the JABSOM EHSO [REDACTED], Kaka'ako Security (692-1911), and other State and Federal Agencies as required.
- 5.4 The AVS Program Manager or their designee in consultation with JABSOM EHSO will evaluate the need and if necessary, start actions to evacuate building and the surrounding area.
- 5.5 JABSOM EHSO is responsible for determining whether building or area is safe to re-enter and will notify the senior person in charge, Campus Security and the EMT. Render first aid as necessary.

6.0 Electricity and Water Utilities Outages

- 6.1 Electricity and water utilities are essential to the operation of all campus facilities and any disruption will require immediate remediation by the Office of Facilities and Grounds. Prolonged outages in part or all of the campus will negatively affect students and personnel and may result in an emergency situation where classes and operations may be suspended. Outages or interruptions of gas and telecommunications services are usually not serious and usually can be rectified in a short period of time. Outages of this type will not result in suspension of classes or operations.
- 6.2 Electrical Outage: Report all electrical outages to the Facilities Management [REDACTED], or the Kaka'ako Security Office at 692-1911.

Unplug all equipment that could be damaged by a power surge before electricity is restored. Turn off lights, appliances, window air conditioners and other devices to reduce the power requirements for restoration. Facilities will take action to turn off large electrical equipment at all the facilities on the Manoa campus.

Evacuate the building or facility if safety of personnel is a concern.

- 6.3 Water Outage: Report all water outages or pipe breaks to the Office of Facilities [REDACTED]. Facilities will send their maintenance personnel to investigate the problem and will fix any problem within their capability. Facilities will report major line breaks to the City and coordinate repairs with them.
- 6.4 Turn off all water faucets and taps. Conserve remaining water resources until restored. Facilities, through their Office of Building Services, may restrict the use of restrooms in affected buildings. Personnel will be directed to the closest building where restrooms are operational.

Should the water outage affect large sections of the campus or the entire campus, classes and operations, except for essential workers, may be suspended.

- 6.5 Telecommunications Outage: Should both telephone and computers go down, contact the Office of Information and Technology Services via wireless connection or by cell phone at 692-1111.

If all forms of electronic communications are down, prepare to send messages via personnel who are able to walk or drive from office to office.

7.0 Prolonged Power Outage General

- 7.1 In the event of a **prolonged power outage**, the Operations Supervisor or their designee will direct the staff to monitor room temperatures periodically throughout the day. If the temperature elevations become life threatening (>85 degrees F), the employees will be instructed to open doors to animal rooms and corridors. If these measures do not suffice, then the AVS Program Manager may instruct that animals be temporarily moved to another facility.

7.1.1 There is a stand-by emergency generator that will provide power for 3-5 days to the vivarium, ABSL3, and BSL3.

7.2 Prolonged power or Air Conditioning (AC) Outage Event Phase

7.2.1 There should be redundant emergency power to the vivarium, including the ABSL3. ABSL2 rodents in Isocages® or Seal Safe® cages should be removed to conventional caging within an hour or risk suffocation. Coordinate with PI responsible for hazardous ABSL2 projects and Biosafety Office before transferring the animals. ABSL3 rodents are left in Isocages during an immediate evacuation.

7.2.2 If the building is on emergency generator power, it is best for AVS to have a separate emergency generator to run its animal colony. Often the larger building generators go down for servicing for longer periods (up to 4 hours every 3 weeks) versus the smaller ones, which go down for 40 minutes every 3 weeks. This also allows AVS to run independent of many problems that may occur with the building's power.

7.2.3 In prolonged outages, consultant electricians (e.g. A1-A electrician) at 839-2771 may be contracted to set up temporary circuits to run fluorescent lights and power outlets for refrigerator, freezers, portable ACs, and light timers. Any consultant work must be coordinated with Facilities.

7.2.4 If power is available, portable AC units can be procured. The placement of these is limited by the exhaust duct, which needs to be set near an exterior window. These units are ideal because they do not require regular water pan drainage. They do, however, need to be reset if the power is turned off even temporarily.

7.2.5 If possible, move perishable items such as produce, diagnostic specimens and reagents requiring refrigeration to areas where power is available. Some labs may use dry ice to keep these cool temporarily.

7.2.6 If freezers are not working, JABSOM may have arrangements for use of dry ice. Otherwise, remove the non-hazardous carcasses for tissue digester disposal ASAP. For infectious carcasses and chemical hazard carcasses, AVS will consult with UH Biosafety and EHSO for guidance before removing them from the freezers.

7.2.7 JABSOM Facilities shall arrange for diesel fuel deliveries until normal power is restored.

7.2.8 If at all possible, do not use halogen lights in an indoor facility that does not have working AC. These lights will generate a great deal of heat and add to the heat load of

the building. Fluorescent or incandescent light fixtures are preferred as they produce much less heat.

- 7.2.9 Floor fans will be placed in rooms and hallways to help circulate air in the event of an AC outage.
- 7.2.10 Doors to the animal rooms may be left open in the event of AC outage. See note on regulated species below. (*The Guide for the Care and Use for Laboratory Animals* specifies the acceptable dry bulb room temperature ranges for each species housed at AVS)
- 7.2.11 Notify the Operations Supervisor immediately if the temperature range exceeds or drops below the acceptable ranges for each species. 68-79 degrees F is the acceptable range for rodents.
- 7.2.12 If there is no boiler for prolonged periods and the AC is still working, be sure to monitor the animal holding rooms every four hours throughout the day to ensure that the temperatures are not too hot or cold for the species. In the case of the 2004 flood, chilled water was throttled back to the animal colony AC until the boiler could be restored to reheat the air coming into the Biomed colony.

8.0 Recovery Phase for Type 2 and 3 Natural and Technological Emergencies

8.1 Actions

- 8.1.1 Coordinate all recovery efforts with the AVS Program Manager or designee. Keep him/her apprised of new problems, when problems are resolved, and when problems remain unresolved.
- 8.1.2 The AVS Program Manager will keep the JABSOM Dean, UH Emergency Planning Management Team, and JABSOM Facilities Office in the loop about animal facilities concerns. They are our best advocates to safeguard the animal colony and its staff.
- 8.1.3 AVS Program Manager or designee will make a damage assessment and submit to the Designated Institutional Official as soon as possible. Photographs will be taken prior to damage clean up or repair. This is for insurance purposes in order to provide evidence for damaged property.
- 8.1.4 AVS Program Manager will communicate information from the Dean when it is safe to return to the facility and coordinate recovery phase activities with the staff.
- 8.1.5 The first priority is to check for injured or trapped individuals and assist them immediately by calling the Kaka'ako Security at 692-1911 or 692-0911.
- 8.1.6 The second priority is to check for injured or trapped animals and ensure that they are cared for or disposed of in a humane manner. The AVS Program Manager will report the final disposition of the animals to the principal investigator in a timely manner.
- 8.1.7 Rooms housing regulated species such as listed below, the AVS Program Manager will contact the following specialist for approval, **BEFORE** making modifications to Plant Quarantine Branch permit requirements for housing these species.

8.1.7.1 Department of Agriculture Plant Quarantine Station (808-832-0579 (Land Vertebrates Specialist (species regulated in the State of Hawaii))

9.0 Deliberate Human Acts of Destruction

9.1 Prevention

- 9.1.1 Prevention is the key in cases of deliberate human acts of destruction.
- 9.1.2 Refer all public inquiries regarding animal use activities to the AVS Program Manager. Do not divulge sensitive information. Reporter inquiries may also be directed to Communications Office, [REDACTED] and the UH ORC public relations contact person.
- 9.1.3 Do not allow photographing of the interior of the facilities without prior approval from administration.
- 9.1.4 Report any suspicious persons or activities in or around the facilities to the AVS Program Manager and security. Security Office can be reached at 692-1911 or 692-0911.
- 9.1.5 Do not share security gate codes. Do not allow unauthorized tailgaters to follow you into the facilities.
- 9.1.6 Report any threatening phone calls to the AVS Program Manager and security.
- 9.1.7 Keep abreast of animal rights activities and issues around the country and the world.
- 9.1.8 Always have the phone numbers for security and emergency posted prominently in each facility.

10.0 Pandemics as Avian Flu, COVID-19, or Inadvertent Escape of Agents into the Environment

This section has been developed in conjunction with subject matter experts and PIs involved in these projects.

10.1 General Information

- 10.1.1 Biological outbreak can be caused by natural occurrence or accidental release of biologic agents, introduced viruses and diseases brought into Hawaii via humans or animals and through bioterrorism which is the intentional release of biologic agents that can cause illness and death. The State has a plan for biological outbreak and the University is an integral part of the State's Plan to combat any type of biological outbreak. The Centers for Disease Control (CDC) should also be consulted for the latest information on biological outbreaks and pandemics. For the latest information on COVID-19 visit:
 - Hawaii State Department of Health <https://health.hawaii.gov/docd/advisories/novel-coronavirus-2019/>
 - CDC COVID-19 <https://www.cdc.gov/coronavirus/2019-ncov/index.html>
- 10.1.2 The greatest operational issue in a pandemic type event will be the effects on absenteeism. An influenza pandemic could last from 18 months to several years with at least two peak waves of activity. In an affected community, a pandemic wave may last about 6 to 8 weeks. Include a backup plan in case of staff shortages.
- 10.1.3 Reporting illnesses. In the case of COVID-19, the symptoms are typically, but not limited to, fever, dry cough, or shortness of breath. If an AVS staff (employees, students, or volunteers/interns) becomes ill while at home, they are required to contact their immediate supervisor by electronic means or phone, prior to reporting to work. Per the UH Office of Human Resources (OHR), March 13, 2020, Coronavirus COVID-19 FAQs for Employees, if AVS staff shows up to work ill, they shall be sent home from the workplace to prevent potential exposure to others, even if the illness is caused by other communicable diseases. The supervisor shall

have AVS staff stay home until 48 hours after their last symptoms.

- 10.1.4 Self-quarantine criteria for COVID-19, as described by the OHR, March 13, 2020, Coronavirus COVID-19 FAQs for Employees, includes: 1) an employee or member of an employee's household returns from a CDC Level 3 location (<https://wwwnc.cdc.gov/travel/notices>), 2) an employee or a member of an employee's household tests positive for COVID-19, and 3) an employee has been confirmed to have been exposed to an individual who tested positive for COVID-19. Under any of these circumstances an employee shall stay at home for 10 calendar days and follow the guidelines set forth by OHR.
- 10.1.5 Increase sanitation of work surfaces in the vivarium will be done on common areas such as, but not limited to, door handles, key pads, commonly touched surfaces. Hand sanitizers will be made available throughout the vivarium. In the case of COVID-19 (alcohol content of >70% alcohol, bleach >10%, or Clidox®) are examples of effective disinfectants.
- 10.1.6 All individuals working in the vivarium will be encouraged to wash their hands regularly for at least 20 seconds, and to avoid touching their faces.

10.2 Biological Outbreak Alert Phase

- 10.2.1 Federal and State agencies will issue advisories and warnings of biological outbreak in the United States and in Hawaii. Advisories and warnings are issued via the media.
- 10.2.2 Should any local biological outbreaks occur that affects the UHM Community, the University Health Services Manoa (UHSM) Office will issue an advisory or warning via their website, the EMT, and the Director of Communications.
- 10.2.3 Feed, bedding, and other critical supplies such as PPE will be stocked to last at least six months, if vendor supplies are available.
- 10.2.4 Long term planning for animal care and operations of the vivarium will be based on the length of the pandemic, the degree or mitigation/containment enforced by State and/or local authorities, the availability of care staff, and the research that will be deemed essential to be maintained during the outbreak. If sufficient notice is given that access to the vivariums will be limited or restricted, AVS staff will do a full change out of the animal cages, increasing the depth of bedding, and then subsequently do a full cage change out every two to three weeks. Spot checks will be done between cage changes to replenish food, water, and check for health of the animals.
- 10.2.5 In the case of a pandemic, social isolation of people and wearing face coverings will be the principal means of disease control until vaccinations are available. In the case of COVID-19, social distancing of at least 6 feet is recommended to avoid the range of potentially infected droplets from an individual's sneeze or cough. Staggering of schedules between AVS care staff and researchers working in the same room will facilitate social distancing.
- 10.2.6 Critical supplies, such as, but not limited to, personal protective equipment (PPE) will be limited within the vivariums to ensure that they are conserved for laboratory use only.
- 10.2.7 In special circumstances, an exemption for animal care procedures may be requested through UH IACUC.

10.3 Biological Outbreak Event Phase

- 10.3.1 When the University Community is affected, the UH Administration will notify all students and

employees of the advisories and warnings. If the accidental release of biologics occurs from a specific campus, the emergency point of contact for that campus will report the incident to the Office of Research Compliance.

- 10.3.1 All students and employees should take the necessary precautions and actions advised by UHSM, State Health Department, and Federal Health agencies. This may include isolation or quarantine orders.
- 10.3.2 In the event that the State and/or local authorities order mitigation or containment of the area, researchers will be encouraged not to start experiments or surgeries animals, that involve long term care of animals. No infectious inoculation will be allowed per the Institutional Biosafety Committee, unless an exemption is authorized by the UH. New animal orders or intra- or inter-institutional animal transfers may be temporarily suspended.
- 10.3.3 Those animal care staff deemed essential workers will be tasked to maintain critical and essential functions for the care of the animals at vivarium at Kaka'ako. Staff shall remain in communication with the AVS Operations Supervisor, for updates and work schedules.
- 10.3.4 If you suspect that you are infected, go to Straub Medical Center (Beretania Street) or your medical care provider. Report all cases and incidences of contact with the various types of biological outbreak to your immediate supervisor and to the appropriate State Health agency as instructed in advisories. Follow the guidelines set forth in the OHR, March 13, 2020, Coronavirus COVID-19 FAQs for Employees.
- 10.3.5 Should an individual in the vivarium test presumptively positive for the pandemic agent, AVS will be responsible to take the lead with clean up in coordination with the appropriate UH (JABSOM, EHSO, Biosafety) and State agencies.
- 10.3.6 If facility support services are limited, e.g. limited availability of boiler, AVS will modify its work schedules to have staff available when the boiler is running. In the event that no boiler (no hot water) is available, AVS will spray cages and accessories with an appropriate disinfectant before running them through the cage wash equipment .
- 10.3.7 If trained animal care staff, researchers, and/or resources become scarce, reduce animal numbers to the least possible numbers.
- 10.3.8 If AVS staff are available, they will assist researchers who are not able to come in to complete their animal research treatments or tend to their breeding colonies.
- 10.3.9 If animal welfare becomes an issue due to lack of adequate care staff and/or resources, the Veterinarian may recommend euthanasia of animals. They will make every attempt to consult with the affected PIs prior to pursuing this course of action.

10.4 Escape or Inadvertent Release of Animals from the ABSL3

- 10.4.1 Escape or inadvertent release from the ABSL3 will be reported immediately using the emergency phone tree for the ABSL3.
- 10.4.2 Live or snap traps will be set up inside the ABSL3 as well as outside the ABSL3, and checked daily.
- 10.4.3 Video surveillance tapes monitoring the ABSL3 will be checked.
- 10.4.4 The AVS Program Manager will report the event to the appropriate authorities.

10.5 Escape or Inadvertent Release of Animals from the Vivarium

10.5.1 Escape or inadvertent release of animals will be reported immediately to the Facility Supervisor.

10.5.2 Live or snap traps may be set up around the facility.

10.5.3 Depending on the circumstances surrounding the release or escape, the Program Manager will report the event to the appropriate authorities.

11.0 Medical Emergencies

11.1 General Information

11.1.1 Responses to non-life threatening, medical incidents for AVS staff and other vivarium personnel are discussed the AVS Occupational Health and Safety Program.

11.1.2 Life-threatening medical emergencies, such as heart attack, stroke, or loss of consciousness, require activation of the AVS Emergency Response Plan. These incidents may occur in the animal facility during regular or off-hours.

11.1.3 Alert Phase

11.1.3.1 The first priority is to check the injured or ill individual and assist them immediately by calling the Kaka'ako Security at 692-1911 or 692-0911.

11.1.3.2 Inform the security guards of the individual's condition and location so that they can contact 911 for help from first responders. If known, explain what occurred and if the individual was working with anything hazardous.

11.1.3.3 Stay with the individual until help arrives. Contact the AVS AVS Program Manager to inform him/her of the situation. If he/she cannot be reached, contact the Operations Supervisor.

11.1.4 Event Phase

11.1.4.1 The building and animal facility are secured at multiple levels. First responders must be escorted by JABSOM security through each door/level of security to reach the individual.

11.1.4.2 JABSOM security utilizes a master key to unlock the vivarium entry door to and override the biometric lock. Animal and procedure room doors within the facility are opened using programmable access codes. A master code for all programmable, vivarium doors is kept in a secured file at the BSB security desk. Storage rooms and other less secured areas can be accessed with the master key.

11.1.4.3 First responders should be advised to wear gloves when handling the affected individual until more is known about what the individual may have been working with. Gloves are available upon entry of each animal or procedure room.

12 Reporting Emergencies

12.1 The AVS AVS Program Manager will report to the UH IACUC and Compliance Office, about

emergencies affecting the well-being of the animals. The Animal Welfare Program will report to the National Institutes of Health Office of Laboratory Animal Welfare, National Science Foundation, or applicable federal funding agency. Refer all public inquiries regarding animal use activities to the AVS Program Manager.

12.2 DO NOT divulge sensitive information. Reporter inquiries may also be directed to Communications Office, [REDACTED] and the UH ORC public relations person.

12.3 **Additional Information**

Oahu Civil Defense Agency lists the following shelters for Punchbowl – Waiialae Vicinity

Tsunamis: Anuenue Complex, Kahala Elementary School (ES), Jefferson Elem, McKinley High School (HS), Waikiki ES. **Hurricanes:** Aliiolani ES, Anuenue Complex, Hokulani ES, Jefferson ES, Kaahumanu ES, Kaimuki HS, Kaimuki Middle School (MS), Kuhio ES, Liholiho ES, Liliuokalani ES, Manoa ES, McKinley HS, Neal Blaisdell Center, Noelani ES, Palolo ES, Roosevelt HS, Stevenson MS, Waiialae ES, Waikiki ES, Washington MS, Wilson ES

12.4 See Appendixes

- Appendix A AVS Emergency Contact Tree Type 2 and 3 Biosafety Emergencies at Kakaako
- Appendix B AVS Emergency Contact Tree Type 2 and 3 Chemical Emergencies at Manoa

Note for emergency flow contact trees below:

- Home phone numbers for AVS staff will be kept confidential by AVS senior management staff.
- Responders for the ABSL3 will include the AVS Program Manager, PIs, in addition to representatives from AVS, Biosafety Office, and the Facilities Management Office.
- [REDACTED] will be the point of contact for BIOSAFETY and related emergencies.
- [REDACTED], JABSOM EHSO, will be the point of contact for chemical related emergencies.
- For medical emergencies call Security at 692-1911 (from a non-JABSOM landline) or X1911 or X9911 (from a JABSOM landline)

APPENDIX A
AVS EMERGENCY CONTACT TREE
TYPE 2 AND 3 BIOSAFETY EMERGENCIES AT KAKAAKO (REVISED 1/16/19)



APPENDIX B
AVS EMERGENCY CONTACT TREE
TYPE 2 AND 3 CHEMICAL EMERGENCIES AT KAKAAKO (REVISED 7/29/16)

