

INFINITY CANNABIS GROWTH, LLC



Project Location

11020 Sky High Ridge.

Lower lake, CA 95457

Parcel Number 122-300-01

RECEIVED

JAN 16 2020

LAKE COUNTY COMMUNITY
DEVELOPMENT DEPT.

Property Management plan

- A – Commercial Cannabis Cultivation Minor & Major Use Permit
- B – Project Description
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B. PROJECT DESCRIPTION

Infinity Cannabis growth, LLC (ICG) Proposes to operate a commercial cannabis cultivation located at 11020 Sky High Ridge, Lower lake, CA 95457 on Lake County APN 122-300-01. The project composed for an A- type 2B "Small Mixed-Light" the total canopy area up to 10,000 square feet. ICG. is owned by Kochagorn Sinsukthaworn and operation by James W Hopkins as CEO. Infinity Cannabis growth, LLC Company will lease the property from James W Hopkins and Kochagorn Sinsukthaworn total of 21.39 Acres

The greenhouse design will be 30'X100' in dimension, 1,500 square feet of canopy per unit. ICG will install six greenhouses and one 30'x30' purchased from a licensed retail business. A 6-foot tall wire fence will be erected around the proposed cultivation area(s), with privacy mesh where necessary to screen the cultivation area(s) from public view. The proposed cultivation operation will utilize a drip and micro-spray irrigation system, to conserve water resources. ICG will put one 5,000 gallon and one 2,500-gallon water storage. Onsite water well will supply water for the operation. ICG using deprivation and artificial light at the rate below of 6 watts per square foot (Tier1) electrical supplied by solar panel system (Off Grid) Additional back-up generator will be stored in wooden materials storage shed. Dry house, harvest space, pesticide and agricultural chemicals, garden tools, composting, and waste will be stored in a separate area from canopy location.

Further information, Infinity Cannabis growth, LLC with pursuant to State of California office of administrative law to get approval of state cultivation license. ICG has been consulting with Department of food and Agriculture, Cal Cannabis Organization, Agency from State Water Resources Control Board, Department of Wildlife and Fishing, California Department of Tax and Fee, Department of Toxic Substances Control EnviroStor and California Fire Department.

D. ENVIRONMENTAL IMPACT SUMMARY

Project Environment:

Infinity Cannabis growth, LLC (ICG) Proposed cultivation operation will be located within an existing agricultural area. Six feet tall fences with privacy mesh will obscure views of the proposed cultivation area(s) from public roads and neighboring properties

Forestry Resources:

No forestland/timberland will be affected by ICG cultivation operation. The proposed cultivation operation will utilize existing farmland. No remove of any commercial tree species as defined by the "California Code of Regulations section 895.1"

Air Quality:

Install air purification system to control the smell of cannabis in the greenhouse, ICG will ensure system with a carbon filter to purify the air inside greenhouse. Once the system has been in operation for the recommended period of time ICG will replace the filters per the industries standards of air quality control.

Biological Resources:

ICG has had a biological site assessment performed for the area of the cultivation operation. The proposed cultivation operation will not interfere substantially with the impact of any native resident or wildlife species.

Cultural Resources:

ICG has had a cultural resources investigation/study performed for the area of the proposed cultivation operation. ICG will follow the recommendations of the cultural resources advise and will notify a qualified archaeologist in the event that historic or prehistoric resources are discovered immediately.

Tribal Cultural Resources:

No prehistoric cultural materials were discovered during a Cultural Resources Investigation/Study performed for the proposed cultivation operation. The results were negative for a record search of the Native American Heritage Commission Sacred Lands File completed for the area of the proposed cultivation operation.

Energy Use and Greenhouse Gas (GHG) Emission:

ICG will perform the Alternative Energy Sources. To reduce direct and indirect impacts related to GHG emissions from cannabis activities. Electrical power for cultivation operations including lighting, heating, cooling, and ventilation will be provided by alternative energy sources, onsite solar photovoltaic systems will be installed to offset

energy demand. ICG will operation generate small amounts of GHGs from the operation of gasoline or diesel engines. To reduce a carbon footprint pollution ICG will offset by growing other plants, which remove carbon dioxide in the air for photosynthesis.

Hazards, Hazardous Materials, and Human Health:

ICG cultivation operation will not generate hazardous wastes, avoid chemical that impact human health. Wearing proper protective equipment. Keep area clean and good housekeeping practices.

Hydrology and Water Quality:

ICG will continue to comply with the Central Valley Water Board's General Order for Cannabis Cultivation to protect water quality and will comply with the State Water Resource Control Board Cannabis Small Irrigation Use Registration.

Land Use and Planning: The cultivation operation location will be located on an Agriculture zoned which designation in the Use General Plan Chapter 21, Article 27 of the Lake County Code. ICG will not conflict with any applicable land use plan, policy, or regulation.

Noise:

ICG cultivation operation will utilize solar energy it will not produce noise. Agricultural equipment used would not be different from surrounding areas.

Public Services:

There are no schools, parks, temple, or public facilities within miles. The cultivation area will not impact public service area. The operation area will be secure and inaccessible from public spaces.

Transportation and Traffic:

ICG cultivation will be using private vehicle during operation. Five to eight vehicle trips per day during operation. At this point there will be no impacts of transportation and traffic.

Utilities and Service Systems :

ICG will operate by solar energy system, using water wells and wind generator to supply the facility. It will not impact any public utilities systems. There will be approximately 50-100 pounds of solid waste from various materials used during cultivation and household trash from personnel. It will be self-hauled to the public landfill. Organic waste will be composted onsite. Recycle plastic materials will be reuse as needed.

E. Hazardous Waste and Substances Sites List Check

Infinity Cannabis growth, LLC (ICG) Proposed cultivation operation will be located within an existing agricultural area. Company study search of the EnviroStor database has been completed: the premise address 11020 Sky high ridge Lower lake, CA 95457 has no shown hazardous waste and substances sites within 1500 feet radius.

Results from website: envirostor.dtsc.ca.gov/public are attached

Cleanup Sites

- ☒ Federal Superfund
- ☒ State Response
- ☒ Voluntary Cleanup
- ☒ School Cleanup
- ☒ Evaluation
- ☒ School Investigation
- ☒ Military Evaluation
- ☐ Tiered Permit
- ☒ Corrective Action

STATUS

All Statuses

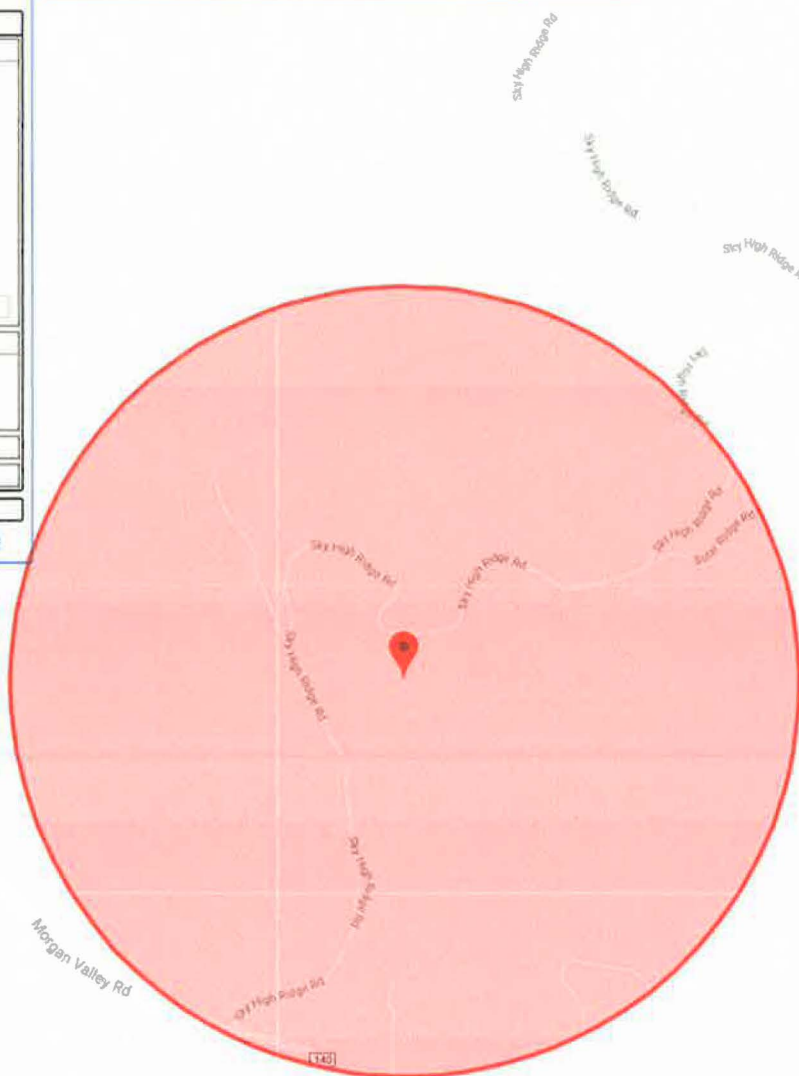
Permitted Sites

- ☒ Operating
- ☒ Post-Closure
- ☒ Non-Operating

Other Sites

GIS Layers

[TAKE A TOUR](#) [SHARE THIS MAP](#)



F. AIR QUALITY

Performance of air pollution control summary.

Power equipment:

Infinity Cannabis Growth, LLC proposed cannabis cultivation operation will not be connected to the electrical grid. Primary power source will come from a battery bank connected to a solar system. ICG will have a generator as a backup power source for the proposed cultivation operation to supply power when it is not available from the solar system.

Additional information on the power sources for the proposed operation can be found in the Energy Usage section of this Property Management Plan.

Gasoline and Diesel-Powered Equipment:

The proposed cultivation operation will generate small amounts of carbon dioxide from the operation of small gasoline engines (tillers, weed eaters, lawnmowers, etc....), a utility vehicle (John Deere gator with a diesel engine), and from vehicular traffic associated with staff commuting. The generation of carbon dioxide would be partially offset by the cultivation of plants, which remove carbon dioxide in the air for photosynthesis.

Fugitive Dust:

The proposed cultivation operation may generate fugitive dust emissions through ground-disturbing activities, uncovered soil or compost piles, and vehicle travel on unpaved roads. Fugitive dust will be controlled by wetting soils with a mobile water tank and hose, or by delaying ground disturbing activities until site conditions are not windy, and by eliminating soil stockpiles.

Odors:

No significant odor impacts are anticipated from the proposed cultivation operation due to the limited population in the area, and the generous setbacks from public roads, property lines, and neighboring residences / activity areas.

The ventilation system of the proposed processing facility, in which the processing of raw cannabis plant material from the proposed cultivation area(s) will occur, will be equipped with carbon filters/air scrubbers to mitigate odors emanating from the building. Additionally, fragrant flowering and herb plants, such as Rosemary, Thyme, and Mint will be planted around the project property to help mask any residual odors emanating from the cultivation operation.

Odor Response Program:

A Community Liaison/Emergency Contact will be made available to Lake County Officials/Staff and the Lake County Sheriff's Office at all times to address any needs or issues that may arise. The Community Liaison/Emergency Contact will be responsible for responding to odor complaints 24 hours a day, seven days a week, including holidays. ICG will provide the name, cell phone number, and email address of the Community Liaison/Emergency Contact to all interested County Departments, Law Enforcement Officials, and neighboring property owners and residents. ICG will encourage neighboring residents to contact the Community Liaison/Emergency Contact to resolve any operating problems before contacting County Officials/Staff. When an odor complaint is received, by the Community Liaison/Emergency Contact will immediately take action to determine the source of the odor for which the complaint was received then mitigation methods will be immediately implemented to reduce/eliminate odors from emanating from the source. Depending on the source, mitigation measures include erecting windcreens, servicing and/or upgrading existing odor control filtration and ventilation systems, and/or the installation of additional air pollution/odor control equipment.

Community Liaison/Emergency Contact Information:

The Community Liaison/Emergency Contact for the proposed cultivation operation is Mr. James Hopkins cell phone number is 702-278-7766 and his email address is icg420farm@outlook.com , There is one residences located approximately 1,025 feet from the proposed cultivation operation area. The address is 11055 Sky High Ridge. Lower lake, CA 95457 (APN 122-340-08)

G. Cultural Resources

Infinity Cannabis growth, LLC has concern about the cultural, historical,

H. ENERGY USAGE

Energy sources

Infinity Cannabis growth, LLC will not be connected to the electrical grid it will use alternative energy sources provide by solar panel systems. Each panel will be capable of producing 250 to 300 watts of power when in full sun. The approximately amount of 2 kw. per day will be used. This photovoltaic solar array and battery bank should be able to supply ample power to the cultivation residential/office building and all other associated equipment. The motion-sensing alarms and security lights of the proposed cultivation operation will be equipped with their own batteries and photovoltaic solar panels. Additional second sources will use generator as the backup. ICG will select the low noise, compact, and fuel-efficient models.

Energy Conservation

ICG will be using alternative energy as a first choice. ICG will implement deprivation and artificial light at a rate below of 6 watts per square foot (Tier1). If there is no need for lighting, ICG will turn them off.

Monitoring and Reporting

ICG will keep track the LED lights that are used for cannabis in greenhouse every day and keep record of it.

I. FERTILIZER USAGE

Fertilizer/Nutrient Sources & Protocols for Use:

Infinity Cannabis Growth, LLC will use BIOCANNA product of nutrients that is based on naturally derived products. Some BIOCANNA products are organic and listed with both OMRI and Eco Union. Some products retain a natural base but do not meet the standards of the National Organic Program.

Fertilizers from vegetable or animal origin are called organic fertilizers. An advantage of organic fertilizers over synthetic fertilizers is that they bring organic material into the soil, which leads to an improvement of the soil's structure. This is better for the environment because there is less washing out of minerals and improved water absorption. A healthy soil with immediately-absorbable and bound minerals requires a lot of attention in organic farming and is closely connected to the three principles on which biological farming is based.

Organic fertilizers, however, may still contain animal substances - something that the conscious organic grower prefers to avoid. BIOCANNA nutrients are vegetable-based and do not contain any animal residual product. The main advantage of this is that the product's composition is much better tuned to the plant's needs. An additional advantage is that the product cannot contain any animal pathogenic organism, such as influenza viruses (avian flu, for example) that can be harmful to human health.

The aim of organic farming is to produce in a sustainable way and in harmony with nature. To realize and maintain this, organic farming is based on three basic principles:

1. No use of chemical pesticides
2. No use of chemical fertilizer
3. Aiming at a wide biodiversity

Through the implementation of these rules, a natural growth environment is created with a good structure and a healthy microflora.

These principles are supported in the use of BIOCANNA products. Unfortunately, this is often not the case with many so-called organic products. These products are often just partially organic, while BIOCANNA products are 100% organic.

Certification of BIOCANNA

The Organic Materials Review Institute (OMRI) is a nonprofit organization that specializes in the review of substances for use in organic production, processing and handling. OMRI's organization is broadly representative of the industry segments with members distributed among certifiers, farmers, suppliers, processors, handlers, consumer organizations and animal welfare and environmental groups.



CAN-4296

Materials review is conducted as a transparent, third-party review of products intended for use in certified organic production, handling and processing.

The OMRI-listed® seal assures the suitability of a product for certified organic production, processing and handling.

Production process of BIOCANNA

BIOCANNA fertilizers are produced in accordance with a complex process. An important step in this process is fermentation. Fermentation is the breaking down of complex substances by means of micro-organisms. Among other things, fermentation is used in the production of wine and beer.

After long research into special micro-organisms and vegetable raw produce, CANNA Research has succeeded in developing a 100% controlled fermentation process. This makes it possible to obtain a consistent product with exactly the right mineral composition and organic ingredients. The substances in BIOCANNA products are immediately absorbable, and stimulate the plant's metabolism and resistance. In addition, they improve the soil quality and the biodiversity.

Thanks to the unique fermentation process BIOCANNA products are rich in bioactive substances, such as fruit acids and oligosaccharides.

BIOCANNA Bio Terra Plus

BIOCANNA Bio Terra Plus is a 100 % plant based natural blend specifically developed for use in organic farming. It is certified by Control Union Certifications for use in organic growing.

It is a reduced peat potting mix, composed of the best white peat, coco coir, and organic components without any materials derived from animals. Coco coir offers a solution as a sustainable alternative for peat. Combining the exceptional physical properties of high-quality white peat, with our highest grade of coco coir proves to be a solution that not only provides an ideal substrate for our plants, but also leaves much less of an impact on our planet than a pure peat-based mix would.

BIOCANNA Bio Terra Plus only contains components from natural plant origins, which are released according to the needs of the plant in conjunction with a healthy Rhizosphere activity. Thus, the plant always begins its life with the optimal amount of nutrition. Through this simple but effective system, the less experienced grower can also achieve great results using BIOCANNA Bio Terra Plus.

BIOCANNA Bio Terra Plus is initially developed to support organic cultivation methods and is ideal to be used alongside other BIOCANNA products, such as BIOCANNA Bio Vega and BIOCANNA Bio Flores.

High Quality Resources

The peat that is used is the best quality that can be used and can only be found in a few places around the world. The longer fiber structures of the peat in BIOCANNA Bio Terra Plus are much lighter which is an absolute advantage for the plant.

We have deliberately chosen not to add bark fines in to the new Bio Terra Plus. It has been found to be one of the ingredients that acted as an attractant for sciurid flies (fungus gnats). Sciurid flies can inhibit the growth process of the root.

The CANNA Coco fiber, unstreamed and treated, used in the mix increases the water holding capacity of the medium while providing the correct balance in porosity for optimal air movement and drainage. Bio Terra Plus, in conjunction with the CANNA/ BIOCANNA nutrient line, provides a more balanced approach to Nitrogen for optimal plant growth. Additionally, the lime charge is designed for a longer use period which provides a more consistent root environment.

New Soil improver is added: Plays a strong role in plant vitality, quality and growth. Provides the best environment for the growth and functionality of beneficial soil bacteria. Avoids nitrate leaching with (drain) water and keeps essential minerals available for plants. Provides an increased water holding capacity with improved drainage properties to ensure a well aerated substrate for faster rooting.

Nutrition regulation

The plant regulates it's needs of nutrients itself, but you need to keep an eye on things to ensure there is the right amount available in the substrate in the first place. If you use too much BIOCANNA Bio Vega or Bio Flores the plant will still take what it needs, but it will create a salt structure which you will need to wash out. If you don't use enough BIOCANNA Vega or Bio Flores it will mean an accelerated consumption of the pre-loaded nutrient in Bio Terra Plus, which can result in a yellowing plant. Please ensure you follow the grows schedule of BIOCANNA Bio Vega or Bio Flores correctly.

BIOCANNA Bio Terra Plus provides a continuous release of nutrients. Further it has a stable and predictable soil pH level from start to finish. A stable pH ensures continuous release of essential plant nutrients for the first 4-6 weeks, depending on the type of crop grown. BIOCANNA Bio Terra Plus assists you during the entire growing cycle

Infinity Cannabis Growth, LLC will be consistent with product labeling. All fertilizers/nutrients will be mixed/prepared on an impermeable surface at least 150 feet from surface water resources and neighboring properties, and will never be applied or allowed to drift offsite or within riparian setbacks (minimum 100 feet). At no time will fertilizers/nutrients be applied at a rate greater than 319 pounds of nitrogen per acre per year (requirement of the State Water Resource Control Board's Cannabis General Order);

Fertilizer product applied by ICG.

BioRHIZOTONIC is a 100% organically certified root stimulator (OMRI).

BioRHIZOTONIC contains a range of vitamins, including vitamins B1 and B2. It stimulates the development of root (hairs), root tips and increases the plant's resistance. A powerful root system ensures that the plant can absorb more nutrients and grows faster.

BioRHIZOTONIC has a noticeably vitalizing effect on plants. Thanks to BioRHIZOTONIC plants extend their roots throughout the subsoil more quickly. This is why BioRHIZOTONIC is, among other things, an ideal remedy for stressed plants such as cuttings during re-potting. BioRHIZOTONIC also restores and strengthens plants that are unhealthy or look poorly.

BIOCANNA Bio Vega developed for the plants' growth phase. Bio Vega is rich in highly absorbable betaine nitrogen that is released according to the plant's needs.

The bioactive substances in Bio Vega stimulate the root development and the formation of strong growth shoots. This allows plants to optimally start their blooming period.

BIOCANNA Bio Flores was developed for the blooming phase of plants. Bio Flores is made of fermented plant material it provides many of the necessary minerals in the correct proportions.

In addition to these minerals, the fermented plant material also contains substances such as Betaine nitrogen and many amino acids, which provide the plant with extra blooming power.

<http://www.cannagardening.com/biocanna>

Fertilizer Storage and Spill Containment

- Store tightly sealed in a dark place, away from extremes of hot and cold
- all fertilizers/nutrients will be stored undercover and in compliance with label instructions, within a secure wooden materials storage shed
- Keep out of reach of children
- The dosage bottle is made of Polyethylene (PVC and cadmium free), that is recyclable
- Personnel will be trained how to appropriately prepare and apply fertilizers/nutrients before being allowed to use them. When using/preparing fertilizers and other chemicals, personnel will be required to use personal protective equipment (PPE) consistent with the MSDS/SDS recommendations for the product they're using/preparing. PPE to be used by staff include safety glasses, gloves, dust masks, boots, pants, and long-sleeved shirts.

J. FISH AND WILDLIFE PROTECTION

The information provided in this section is derived from Huffman-Broadway Group, Inc. Senior Environmental Scientist Mr. Gary Deghi on January 8, 2020. He has completed a Biological Resources Report related to licensing of a cannabis cultivation operation under the CalCannabis Cultivation Program within a 21.39-acre site at 11020 Sky High Ridge Road (APN 122-300-01) near Lower Lake, Lake County, California.

Biological analysis included

- (1) a review of the habitat characteristics of the site and species of plants and animals expected to utilize the site;
- (2) review of the California Natural Diversity Data Base (CNDDDB) to determine if any populations of endangered, threatened, or rare species have occurred historically or are currently known to exist in the project vicinity;
- (3) a field survey of the site by an HBG biologist, and
- (4) an evaluation of whether the proposed project has the potential to result in impacts to sensitive habitats or special status species.

Additional study biological impacts according to CEQA

- a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Wildlife and Game or U.S. Fish and Wildlife Service.
- b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service.
- c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.
- e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

K. OPERATION MANUAL

The operating Standards

Infinity Cannabis Growth, LLC doing business as a professional cannabis cultivation. Before issuing the use permit, ICG has done location and local ordinance study for the operating area. ICG proposed to operate A- type 2B Greenhouses Monday – Sunday, from 8.00 am to 6.00 pm. ICG will have a management team which will be lead by James W Hopkins, The Chief Executive Officer. At least two members of ICG staff will be on site twenty-four hours a day, seven days a week for security and safety purposes.

At the beginning of the cultivation, ICG will purchase soils, nutrients, fertilizer, from the retail farming stores. Tools and necessary device will be purchased from hydroponic stores. During greenhouse cultivation ICG will use The BioTrackTHC System (for more detailed information see attached) to record all cannabis growing, cure sitting, harvest processes, trimming product, grade quality product, tracking and selling processes throughout the complete chain of custody operation. Unique Identifiers (UIDs) will be attached to each cannabis plant as required by the California Cannabis Track-and-Trace (CCTT) system. At least one manager will be working on computer software, update data, performing report and nursing cannabis plants.

ICG will adhere to the inventory tracking and recording requirements of the CCTT system. All staff will be trained in the requirements of the CCTT system, and at least two members of ICG managerial staff will be designated track-and-trace system administrators. The designated track-and-trace system administrators will complete an initial training provided by the California Department of Food and Agriculture and will participate in ongoing training as required. All cannabis transfers/movement will be reported through the CCTT system, and a track-and-trace system administrator will supervise all tasks with high potential for diversion/theft.

Processing (drying, curing, grading, trimming, storing, packaging, and labeling) of harvested cannabis plants will take place in the proposed processing facility. Immediately after being harvested, raw cannabis plant material will be weighed, recorded, then hung in the drying/harvest storage area of the proposed processing facility. Once dry, the raw cannabis plant material will be weighed, recorded, then transferred to the processing area of the Processing Facility. There it will be trimmed, graded and packaged, then weighed, recorded, and transferred to the secure storage area of the Processing Facility, until transferred to a State of California-licensed Distributor. All activities within the proposed Processing Facility will be under constant video surveillance and will be overseen by a track-and-trace system administrator.

Before transferring cannabis to a State of California-licensed Distributor. ICG operator track-and-trace system administrator will enter all required commercial cannabis activities into the California Cannabis Track-and-Trace – Marijuana Enforcement Tracking Reporting Compliance system (CCTT-METRC). For each purchase order/shipment, an electronic shipping manifest that includes a track-and-trace UID will be completed. ICG will securely transmit the manifest to the licensed distributor that will be receiving the

High Level Overview of BiotrackTHC

BioTrackTHC's greenhouse management tool and labeling features allow for each lot of usable marijuana provided to a marijuana dispensary to have all soil amendments, fertilizers and other crop production aids applied to the growing medium or marijuana plant included in the lot. The BioTrackTHC System issues a globally unique, non-repeating 16-digit identification number to each plant. At every stage in the product lifecycle where something needs to be differentiated, the System issues a new "child" identifier (e.g.,) separating flower from stems during the harvest process, separating edible batches that are going to different dispensaries, the creation of new clones or seeds from a mother plant, etc...). The System issues the identifier to prevent accidental or intentional identifier duplication by the user, and the 16-digit identifier ensure scalability and longevity—the System could generate 1,000,000 identification numbers per second and it would not run out of unique identifiers for over 317 years.

During the entire lifecycle of a cannabis seed, clone or plant, the system will record robust data pertaining to the cultivation, harvest, cure, watering, lighting, nutrient usage, soil/medium use, and other specific information (such as chain of custody by employees) for the plants or derivative materials or products. The system records this information for easy querying and reporting to facilitate compliance.

BioTrackTHCs wholesaling and greenhouse management tools allow for robust information collection. Examples of the information collected include, but are not limited to; name of originating marijuana establishment, batch number, original plant(s) that batch is derived from, if it was a cutting (clone) or seed, dates planted, yield reports, date of harvest, and all pesticides, herbicides, and fertilizers used to grow the plants. Instantaneously, upon generation of a wholesale, all of the information including name, strain, quantity, registry identification card, name of establishment, and even associated tax is available on wholesale reports which can be run for any specified time period.

BioTrackTHCs greenhouse management tools allow for complete tracking of any plant or plant material product as well as its disposal, while keeping record of the disposal explanations. The system will also keep record of the agent who disposed of it, and the number of failed or unusable marijuana plants

BioTrackTHC has the inclusive capability to track all measurable aspects of a marijuana plant. In addition to the literal weights of the cannabis, the system can associate 'usable marijuana' quantities with any created infused marijuana products. The system's product conversion tools enable the quantities of usable marijuana as well as associated conversion wastes to be tracked with ease. This ensures that whether the plants and/or plant products are in their relative cultivation or processing phases, they can be fully accounted for and tracked. Within the system there are a number of functions designed specifically for use with laboratory testing. This includes but is not limited to the following:

- Laboratory facility detail information options to notate lab credentials
- Log and directly associate lab results with a specific lot or batch of product
- Inventory adjustment logging for testing from available inventory
- Direct porting of lab results to product labels

Within BioTrackTHC there are a number of functions designed specifically for use with laboratory testing. The system captures all necessary quality assurance info, approved testing laboratory information, and test results. All of this information is easily ported on to the inventory or product label for accuracy.

If a product must be destroyed the system will document the destruction in accordance with the registered organization's approved operating plan.

Within the system, the license holder will harvest and cure their plants while entering total weights (wet, dry, useable flower, stems, seeds and other materials or waste) to track and record all plants and plant matter that is collected during these phases. The system collects this data and properly records the information by associating it to the originating unique identifier. All weighed plant material (whether it is useable materials or waste) is then given their own unique identifiers that are traceable back to the originating identifier. This allows license holders to record a chain of supply for all harvested, cured and waste materials during the process. Additionally, the system allows for license holders to complete extra weight collections during a "double flowering" process. This process is initiated when a cultivator harvests the top half of a plant and allows the bottom half to continue to flower in order to maximize their yields on a per plant basis. The system allows for multiple harvests of a single plant and is recorded in the system for this purpose by selecting the "additional collections."

The system also allows license holders to collect weights of specific containers used in the weighing process. These container weights can be preloaded into the system prior to harvest and curing events. Container weights will then be accounted for automatically when weighing wet or dry plant materials.

The system allows license holders to vertically integrate their weight scales to the system. This means that a license holder can add material to a scale during a phase of the lifecycle. If the individual removes some of the material from the scale, the weight automatically adjusts within the system, rather than having to reset the scale and weigh again. This prevents weight entry error and assists license holders in facilitating compliance easily. The system can use data over a specific period of time to determine what the normal wet to dry weight ratio is for a specific strain or lot of plants. This allows administrators to closely monitor shrinkage and identify diversion incidents (if any).

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BioTrackTHC's label creation tool enables licensed producers to create custom container-client labels with any fields necessary to comply with applicable law. All aforementioned required fields can be added as variables. In addition to this a user can add custom disclaimers and

warnings. The system will automatically print the container-client specific label upon completion of the sale. Reports are retained within the system and can be accessed indefinitely. In addition to storing information, the system also has the ability to create custom labels for cultivation, manufacturing and testing results.

The system (through the integrated transportation manifest module), records a wealth of information pertaining to a transport event. The following information is recorded (including, but not limited to):

- Sender License Holder Information
 - o License/permit number
 - o Address
 - o Phone
 - o Date of transport
 - o Time of transport beginning and end (from location to location)
 - o Employee(s) transporting and related employee info (date of birth, name, age, ID# etc.)
 - o Transporting Employee(s) signature of acceptance
 - o Transport Vehicle (make, model, VIN, color etc.)
 - o Turn by Turn directions from and to location (pinged by google maps and in free-form to allow for edits of travel route per the license holder's preference)
- Recipient License Holder Information
 - o License/Permit numbers
 - o Address
 - o Phone
 - o A section to show how many items of the total sent were received
- Items Listed for Transport
 - o Item identifier
 - o Total units being transported
 - o Total units received by recipient

Additionally, each transportation manifest is assigned its own unique identifier for easy reference during a traffic stop or for regulator/law enforcement reference to the oversight agency. The manifest is created digitally within the system and is available to the sender and recipient in PDF format for printing of hard copies.

BioTrackTHCs wholesaling and growhouse management tools allow for robust information collection. Examples of the information collected include, but are not limited to; name of originating marijuana establishment, batch number, original plant(s) that batch is derived from, if it was a cutting (clone) or seed, dates planted, yield reports, date of harvest, and all pesticides, herbicides, and fertilizers used to grow the plants. Instantaneously, upon generation of a wholesale, all of the information including name, strain, quantity, registry identification card, name of establishment, and even associated tax is available on wholesale reports which can be run for any specified time period.

BioTrackTHCs growhouse management tools allow for complete tracking of any plant or plant material product as well as its disposal, while keeping record of the disposal explanations. The system will also keep record of the agent who disposed of it, and the number of failed or unusable marijuana plants

Within inventory a user has the ability to add notes to properly document all relevant data needed for the item. After selecting "Apply Notes" a user can specify their water usage per plant, per reservoir, per room, etc. When a user selects "Apply Additives" they can select a specific pesticide, nutrient, or additive and notate what was applied to a given plant, room, table or applicable category.

The system will record the reason and associate it with the identifier for that plant or product. The data associated with the destruction is retrievable through pulling a simple report within the system for record keeping or reporting purposes. The report will show the person who created the destruction event, a timestamp of when the event was created, the identifiers for all plants or products to be destroyed, and the reasons the items were selected for destruction.

Additionally, the system can adjust inventory and always requires a reason for removal when utilizing the inventory adjustment feature. Product in need of quarantine can be separated from bulk and placed in the designated area. Inventory destruction can be initiated through the system requiring documentation of destruction purpose and/or approved method as well as the employee performing the action. Although the inventory can be adjusted or voided, at no time is any data ever fully deleted as BioTrackTHC maintains a log of every action, including adjustments and voids, so that the entire history of the system may be reconstructed. The availability and report ability of the system data enables the said entity to produce any information necessary for the Department during an inspection or at the Department's request.



Cultivation Operations

Cultivation Facilities have a lot of moving pieces, BioTrackTHC™'s Cultivation Operations system simplifies the process.

With over 100 prebuilt reports, data is captured at nearly every plant action, sure to impress even the most analytical grower.

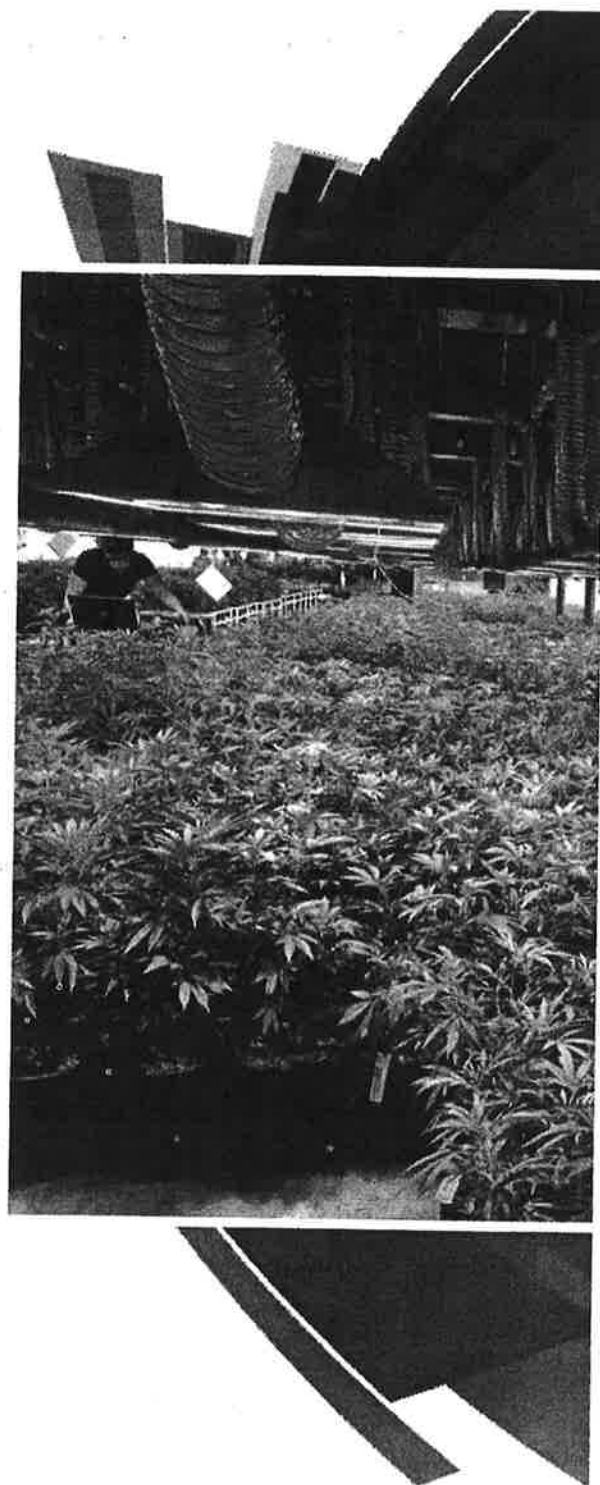
By streamlining work flows and providing key data points necessary to maximize yields, BioTrackTHC™ provides unparalleled business intelligence and data.

The system acts as a digital representation of your physical site with custom rooms and tables making it incredibly fast and easy to locate individual plants. Quickly set plant reminders or take advantage of the Strain Notes to keep light or water schedules consistent.

BioTrackTHC™'s industry leading security protocols record activity by unique PIN or Biometric Finger Print. This added level of security increases accuracy and transparency while keeping employees accountable for every nutrient applications or room to room movement.

Easily maintain a compliant operation by recording flower, trim and other byproduct weights then track converted items like extracts for edibles in one simple interface. BioTrackTHC™ makes it easy to trace converted products to the source material while recording the complete chain of custody in the event of a recall.

Focus on growing knowing the system is predicated on enforcing transparency, accountability, and compliance.



Harvest/Cure Settings

Weigh Wet? Trim Dry? Top Cut? BioTrackTHC™ supports custom work flows, multiple collection points, and grade product upon curing.

Yield Forecasting

Predict yields; 30, 60, 90 days out based on previous harvest data and growing conditions.

Genealogy Tracking

Record plant genetics, track cross breeding, and monitor clone potency results.

L. PEST MANAGEMENT

Allowable Pesticides for Cannabis Cultivation & Required Reporting

ICG will only apply pesticides product that are legal to use, must be registered by both the U.S Environmental Protection Agency (U.S. EPA) and the California Department of Pesticide Regulation (DPR). All pesticide product labels include a warning statement, precautionary statements for protecting human and environmental health storage and disposal statements and directions for use. When using pesticide products in cannabis cultivation, applicators must not use a rate that is higher than the rates listed on the label and follow the agricultural use requirements including method of application, restricted entry interval, personal protective equipment and pre-harvest interval. Identification Number (OID) from their County's Department of Agriculture and submit Monthly Pesticide Use Reports (PURs). PURs are required to be submitted by the 10th day of the month following the month in which the work was performed. PURs can be submitted either electronically through the CalAg Permits website or by using the appropriate paper form.

Pesticides & Protocols for Use

Integrated Pest Management (IPM) is an overarching strategy with specific protocols for preventing pests in an agricultural environment by employing techniques for identifying, managing and eliminating pests should they arise. It is a better use of resources to prevent a pest problem from occurring by creating an inhospitable environment for pests, facilitating induced systemic resistance and proper operation design.

With cannabis being an agricultural crop, the solutions to its cultivation problems lie within traditional agriculture. A well-crafted IPM plan is an effective strategy for every cannabis cultivator to mitigate crop loss, increase quality and utilize correct techniques to achieve the desired result.

IPM helps create a balanced ecosystem, provides alternatives to pesticide usage, saves money, establishes a safer work environment for employees and can enhance a cultivator's image. A balanced ecosystem keeps one species from overpopulating and doing vast damage to another species. However, with pesticide usage, the balance is frequently disrupted by killing both the pest and its natural predator, and unintentionally causing the pest to become resistant to the pesticide used. The chance of resistance increases within improper application. IPM only applies a pesticide at the right moment in a pest's life cycle, when the pesticide will be most effective.

In cannabis operations, a solid IPM program also will take into account what pesticides are allowed in your state or market, when they can be applied and how workers need to be trained and educated on protective equipment, certified in worker protection standards, understand reentry period requirements, and how to properly apply and dispose of pesticides.

IPM can save a cultivator money through mitigation of crop damage and loss. Cultivators will not feel pressured to use unapproved pesticides when they have many options for pest control. This eliminates the risk of a product recall, as well as the brand damage and financial losses associated with recalls.

The first steps in creating an IPM plan are:

1. Understand which pests are common in a cultivator's agricultural zone and microclimate. This can be done by contacting the local Department of Agriculture, Farm Bureau or a university agronomy extension.
2. Research and understand each pest that can affect cannabis.
3. Develop a formal plan, tailored to preventing pests in the local region that will most likely attack a cannabis crop.
4. Implement a pest identification, monitoring and control system to support the formal IPM plan

The Control System

1. Daily inspections. Inspections examine five triggers for pest proliferation: entry points, water sources, food sources, harborage areas and employee areas. The five triggers are examined to find any pests, determine what the pest is and the extent of the damage.
2. Pest identification. It is crucial to know thine enemy in order to implement the best practices for managing and eliminating a pest. If a cultivator can't identify a pest, she can send a sample to her university extension or other qualified sources for analysis.
3. Selection of control methods. Deciding which methods to use is based on what the best practices are for each specific pest, where the plant and pest are in their respective life cycles and being in legal compliance.
4. Monitoring. This is where the pest's population and crop damage is observed.
5. Analysis of the control strategy's effectiveness. If the control strategy has achieved its goals, then the cultivator will follow the plan to its conclusion. If the control strategy is determined to be ineffective, then it will need to be adjusted.

Management and Elimination

Five major strategies exist for managing and eliminating pests within an integrated pest management plan: cultural, physical, genetic, biological and chemical.

1. Cultural Controls: Cultural controls modify the environment to make the cultivation operation an unaccommodating habitat for pests. They involve practices such as adjusting the irrigation schedule to combat root disease, reducing humidity to make the environment less hospitable to pathogenic fungus and shaping the canopy to facilitate superior airflow.
2. Physical Controls: Physical controls use mechanical devices and physical methods to prevent, trap and remove pests, such as filters on air intakes, the placement of sticky traps, and the removal of diseased plant material.
3. Genetic Controls: Genetic controls emphasize selecting and breeding pest-resistant varieties and manipulating pest genetics. Genetic controls used by a cultivator would be culling all susceptible varieties from their agricultural operation or releasing sterile male

insects to breed with fertile female insects to trick the females into copulating without breeding offspring that would continue to devastate the crop.

4. **Biological Controls:** Biological controls utilize natural predators, parasites, pest diseases and other organisms to counter the effects of pests or to prevent them altogether. Beneficial fungi and microbes inoculated into the soil increase nutrient uptake and the plant's disease resistance. Nematodes can be released into the soil to kill larvae of trips and other insects that lay their eggs in soil. Biological controls use nature to combat nature.

5. **Chemical Controls:** Chemical controls can be divided into categories. The first is traditional pesticide application. Pesticide applications are used only when all other control methods are deemed ineffective. They also are utilized only when it would be effective in the pest's life cycle. Pesticide selection and use within an IPM program is designed to identify ecologically sound options that are effective while minimizing harm. For cannabis cultivation, this means using OMRI (Organic Materials Review Institute) and minimum-risk pesticides. The second category is biorational chemicals. Pheromones used to confuse, and trap insects are examples of biorational chemical usage. Attractants, anti-feeding agents and repellents are biorational chemicals as well.

Pesticide Storage and Spill Containment

When not in use all pesticides will be stored under cover and in compliance with label instructions, within a secure wooden materials storage shed located adjacent to the proposed cultivation area and more than 150 feet from the nearest surface water body. All pesticides will be stored in their manufacturer's original containers/packaging, within secondary containment structures to prevent possible exposure to the environment. Absorbent materials designed for spill containment and spill cleanup equipment will be maintained within the materials storage shed and adjacent to the pesticide mixing/preparation area for use in the event of an accidental spill.

Materials Safety Data Sheets (MSDS/SDS) for all pesticides used by ICG will be stored within the materials storage shed and available for personnel to reference at any time. Personnel will be trained how to appropriately prepare and apply pesticides before being allowed to use them. When using/preparing pesticides and other chemicals, personnel will be required to use personal protective equipment (PPE) consistent with the MSDS/SDS recommendations for the product they're using/preparing. PPE to be used by staff include safety glasses, gloves, dust masks, boots, pants, and long-sleeved shirts.

IPM Monitoring Sheet

Date	Site Name	Time	Crop	Growth Stage								
Weather / field observations:												
Growing Section		1	2	3	4	5	6	7	8	9	10	Total
Pests												
Aphids												
Larva												
Adults												
Fungus Gnats												
Root Aphid												
Thrips												
Larva												
Adults												
Whiteflies												
Larva												
Adults												
Notes:												
Growing Section		1	2	3	4	5	6	7	8	9	10	Total
Pests for the Microscope												
Broad Mite												
Russet Mite												
Spider Mites												
Notes:												
Growing Section		1	2	3	4	5	6	7	8	9	10	Total
Beneficial Insects												
Rove Beetle												
Predator Mite: _____												
Predator Mite: _____												
Other: _____												
Notes:												

[illegible][illegible]

M.SECURITY

Secured entry and access

The Project Property is accessed from Morgan Valley Road and Sky High Ridge Road via a graveled private access road/driveway approximately one half mile in length. An iron gate located directly adjacent to Sky High Ridge controls access to the private access road/driveway. An additional locking gate will be installed on the private access road/driveway where it enters onto to the Project Parcel (main entrance), to control access to the proposed cultivation operation. Both gates will be closed and locked outside of core operating/business hours (8am to 6 pm) and whenever ICG personnel are not present.

A 6-foot woven galvanized wire fence will be erected round the proposed cultivation area(s). Privacy Screen/Cloth will be installed on the fence where necessary to screen the cultivation area from public view. Posts will be set into the ground at not more than 10-foot intervals, and terminal posts will be set into concrete footings. Secured entry and access to the cultivation area(s) will be controlled via locking gates located on the west side of the proposed cultivation area(s). These gates will remain locked whenever ICG personnel are not present. All gates will be secured with heavy duty chains and commercial grade padlocks. Only the landowner and approved ICG managerial staff will be able to unlock the gates on the Project Property.

Six 30'x 100' sq. foot green house will be established and maintained around the proposed cultivation operation to provide for visibility and security monitoring. Motion-sensing alarms will be installed at the main entrance to the Project Parcel to alert personnel when someone/something has entered into the premises. Motion sensing security lights will be installed on all external corners of the proposed cultivation area(s), and at the main entrance to the Project Parcel. All lighting will be fully shielded, downward casting and will not spill over onto other properties or the night sky. Personnel will be instructed to notify ICG managerial staff immediately if/when suspicious activity is detected. ICG managerial staff will investigate the suspicious activity for potential threats, issues, or concerns. ICG personnel and managerial staff will be instructed to contact the Lake County Sheriff's Office immediately if/when a threat is detected. When a visitor arrives at the proposed cultivation operation via the main entrance during core operating/business hours. They will be immediately greeted by a member of ICG managerial staff. The staff member will verify the visitor's identification and appropriate documentation/credentials. They will then be assigned an escort to show the visitor to the appropriate area(s), in accordance to their approved itinerary. No visitors will ever be left unattended.

Diversion/Theft Prevention

All ICG personnel, employee will be required to undergo a criminal background check. Visitors and personnel will be required to sign-in and sign-out each day and record the areas in which they worked and the tasks they were assigned. Personnel will be required to store personal items in the onsite residential/office building throughout their shift. ICG

will adhere to the inventory tracking and recording requirements of the California Cannabis Track-and-Trace (CCTT) system. All personnel will be trained in the requirements of the CCTT system, and all cannabis transfers/movement will be reported through the CCTT system. At least two members of ICG managerial staff will be designated track-and-trace system administrators. A track-and-trace system administrator will supervise all tasks with high potential for diversion/theft and will document which personnel took part in the task(s). In the event of any diversion/theft, law enforcement and the appropriate licensing authority will be notified within 24 hours of discovery.

Video Surveillance

ICG will use a closed-circuit television (CCTV) system with a minimum camera resolution of 1080p to record activity at all sensitive areas in any lighting conditions 24 hours a day and at a minimum of 30 frames per second. The CCTV system will feed into a monitoring and recording station in the onsite residential/office building. The CCTV system will be capable of supporting remote access and will be equipped with a failure notification system that immediately notifies ICG managerial staff of any interruptions or failures. All recordings will be kept a minimum of 90 days and 7 years for any corresponding reported incidents caught on tape. Proposed camera placements can be found on the accompanying Security Site Plan. Areas that will be covered by ICG's CCTV system include:

1. Entryways to the property, cultivation area(s), residential/office building and shop/processing facility.
2. Perimeter of each greenhouse cultivation area.
3. The monitoring and recording station (within the residential/office building).
4. Interior of the shop/processing facility.

Community Liaison and Emergency Contact

A Community Liaison/Emergency Contact will be made available to Lake County Officials/Staff and the Lake County Sheriff's Office at all times to address any needs or issues that may arise. ICG will provide the name, cell phone number, and email address of the Community Liaison/Emergency Contact to all interested County Departments, Law Enforcement Officials, and neighboring property owners and residents. ICG will encourage neighboring residents to contact the Community Liaison/Emergency Contact to resolve any problems before contacting County Officials. When a complaint is received, the Community Liaison/Emergency Contact will document the complainant and the reason for the complaint, then take action to resolve the issue (see the Odor Response Program in the Air Quality section of this Property Management Plan for odor related complaints/issues). A tally and summary of complaints/issues will be provided in ICG annual Performance Review Report. The Community Liaison/Emergency Contact for Infinity Cannabis Growth, LLC is Mr. James W Hopkins cell phone number is (702-278-7766)

SALES INVOICE/ SHIPPING MANIFEST

PLEASE USE PERMANENT INK FOR ALL ITEMS

INVOICE/MANIFEST NUMBER:			
ATTACHED PAGE(S)?	YES <input type="checkbox"/>	NO <input type="checkbox"/>	# OF ATTACHED PAGES:

ACTUAL DATE AND TIME OF DEPARTURE:	/ /	<input type="checkbox"/> AM <input type="checkbox"/> PM
ESTIMATED DATE AND TIME OF ARRIVAL:	/ /	<input type="checkbox"/> AM <input type="checkbox"/> PM

SHIPPER INFORMATION	
STATE LICENSE #	
TYPE OF LICENSE	
BUSINESS NAME	
BUSINESS ADDRESS	
CITY, STATE, ZIP CODE	
PHONE NUMBER	
CONTACT NAME	

RECEIVER INFORMATION	
STATE LICENSE #	
TYPE OF LICENSE	
BUSINESS NAME	
DELIVERY ADDRESS	
CITY, STATE, ZIP CODE	
PHONE NUMBER	
CONTACT NAME	

DISTRIBUTOR INFORMATION			
STATE LICENSE #		DRIVER'S NAME	
BUSINESS NAME		CA DRIVER'S LICENSE#	
STREET ADDRESS		VEHICLE MAKE	
CITY, STATE, ZIP		VEHICLE MODEL	
PHONE NUMBER		VEHICLE LIC. PLATE #	
CONTACT NAME		ACTUAL DATE AND TIME OF ARRIVAL	/ / <input type="checkbox"/> AM <input type="checkbox"/> PM

PRODUCT SHIPPED DETAILS							
SHIPPER COMPLETES ALL THE UNSHADED COLUMNS BELOW. RECEIVER COMPLETES ONLY THE SHADED COLUMNS BELOW							
(Please attach additional pages, if needed)							
UID TAG NUMBER (IF APPLICABLE)	ITEM NAME AND PRODUCT DESCRIPTION (INCLUDE WEIGHT OR COUNT)	QTY ORDERED	QTY REC'D	UNIT COST	TOTAL COST	RETAIL ONLY	
						UNIT RETAIL VALUE	TOTAL RETAIL VALUE

PRODUCT REJECTION	
IF PRODUCTS ARE REJECTED, PLEASE CIRCLE THE ITEMS BEING REJECTED IN THE PRODUCT SHIPPED DETAILS SECTION ABOVE	
REASON FOR REJECTION:	

PRODUCT RECEIPT CONFIRMATION			
I CONFIRM THAT THE CONTENTS OF THIS SHIPMENT MATCH IN WEIGHT AND COUNT AS INDICATED ABOVE. I AGREE TO TAKE CUSTODY OF ALL ITEMS AS INDICATED RECEIVED ABOVE - AND WHICH ARE NOT CIRCLED. THE PRODUCTS CIRCLED ABOVE ARE REJECTED FOR DELIVERY AND REMAIN IN THE CUSTODY OF THE DISTRIBUTOR FOR RETURN TO THE SHIPPER AS INDICATED ON THIS FORM AND ALL ATTACHED PRODUCT DETAILS SHEET(S).			
NAME OF PERSON RECEIVING AND/OR REJECTING PRODUCT:		PHONE NUMBER:	
SIGNATURE OF PERSON RECEIVING AND/OR REJECTING PRODUCT:		DATE SIGNED:	

SALES INVOICE / SHIPPING MANIFEST
PRODUCT DETAILS ATTACHMENT PAGE

PLEASE USE PERMANENT INK FOR ALL ITEMS

INVOICE/MANIFEST NUMBER
ATTACHED TO:

ATTACHED PAGE

OF

TOTAL PAGES

PRODUCT SHIPPED DETAILS

SHIPPER COMPLETES ALL THE UNSHADED COLUMNS BELOW. RECEIVER COMPLETES ONLY THE SHADED COLUMNS BELOW

(Please attach additional pages, if needed)

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PRODUCT REJECTION

PRODUCT REJECTION
IF A PRODUCT(S) ARE REJECTED, PLEASE CIRCLE THE ITEMS BEING REJECTED IN THE PRODUCT SHIPPED DETAILS SECTION ABOVE

REASON FOR REJECTION:

REASON FOR REJECTION:

PRODUCT RECEIPT CONFIRMATION

PRODUCT RECEIPT CONFIRMATION
I CONFIRM THAT THE CONTENTS OF THIS SHIPMENT MATCH IN WEIGHT AND COUNT AS INDICATED ABOVE.
I AGREE TO TAKE CUSTODY OF ALL ITEMS AS INDICATED RECEIVED ABOVE - AND WHICH ARE NOT CIRCLED.
THE PRODUCTS CIRCLED ABOVE ARE REJECTED FOR DELIVERY AND REMAIN IN THE CUSTODY OF THE DISTRIBUTOR FOR RETURN TO THE
SHIPPER AS INDICATED ON THIS FORM.

THIS PRODUCT DETAILS ATTACHMENT PAGE IS ATTACHED TO INVOICE #

NAME OF PERSON RECEIVING AND/OR
REJECTING PRODUCT:

SIGNATURE OF PERSON RECEIVING
AND/OR REJECTING PRODUCT:

PHONE
NUMBER:

DATE
SIGNED:

N. STORM WATER MANAGEMENT

Stormwater Management Measures

Infinity Cannabis Growth, LLC will increase amount of soft surface landscaping, such as a garden, wood chips or gravel to prevent water from seeping through the surface down to underlying layers of soil and gravel. ICG proposed to use natural systems to filter and recharge stormwater into the ground on low impact development with "green" storm water infrastructure. The proposed cultivation area(s) will not increase the impervious surface

area of the Project Parcel and should not increase the volume of runoff. Actually, the volume of stormwater runoff generated from the field in which the proposed cultivation area(s) will be located should decrease from the addition of well-vegetated swales and erosion and sediment control measures that are not currently being implemented. Well-vegetated buffers (minimum 100 feet) will be maintained around the proposed cultivation area(s) to filter and/or remove any sediment, nutrients, and/or pesticides mobilized by stormwater runoff, and prevent those pollutants from reaching nearby surface water bodies.

Erosion and Sediment Control Measures

ICG cultivation operation will be maintained/protected as a permanent erosion and sediment control measure. Straw mulch will be applied if needed. Additional erosion and sediment control measures will be implemented to protect those areas and their outfalls. This project's Site Manager will conduct monthly monitoring inspections to confirm that this operation is in compliance California Water Code. Monitoring inspections conducted during and following the winter wet weather period, indicate that the erosion and sediment

control measures implemented within and around the existing cultivation area were successful in preventing sediment discharges to surface water bodies.

Regulatory Compliance (Stormwater)

ICG has submitted information through The State Water Resources Control Board's online portal on 21 November 2019, for discharges of waste associated with cannabis cultivation related activities. Based on the information provided, will be processed as a Tier 1 Low Risk

ICG assigned under the Central Valley Water Board's General Order for Cannabis Cultivation Activities since December 13, 2019, ICG's Waste Discharge Identification Number (WDID) is 5S17CC422708.

The information submitted by the Discharger states the disturbed area is equal to or greater than 2000 sq. feet and less than 1 acre (43,560 sq. feet), no portion of the disturbed area is within the setback requirements, no portion of the disturbed area is located on a slope greater than 30 percent, and cannabis cultivation area is less than 1 acre.

Monitoring and Reporting Program

The following are the Monitoring and Reporting Requirements for ICG proposed cannabis cultivation operation from the Cannabis General Order:

- Winterization Measures Implementation
- Tier Status Confirmation
- Third Party Identification (if applicable)
- Nitrogen Application (Monthly and Total Annual)

An Annual Report shall be submitted to the CentralValley Regional Water Quality Control Board by March 1st of each year. The Annual Report shall include the following:

1. Facility Status, Site Maintenance Status, and Storm Water Runoff Monitoring.
2. The name and contact information of the person responsible for operation, maintenance, and monitoring.

A letter transmitting the annual report shall accompany each report. The letter shall summarize the numbers and severity of violations found during the reporting period, and action taken or planned to correct the violations and prevent future violations.

The transmittal letter shall contain the following penalty of perjury statement and shall be signed by the Discharger or the Discharger's authorized agent:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

ICG will adhere to these monitoring requirements to maintain compliance with the Cannabis General Order and will be happy to provide a copy of their Annual Monitoring Report to Lake County Officials if requested.



Central Valley Regional Water Quality Control Board

13 December 2019

WDID: 5S17CC422708

DISCHARGER and LANDOWNER

Kochagorn Sinsukthaworn
Infinity Cannabis Growth, LLC
11020 Sky High Ridge
Lower Lake, CA 95457

LANDOWNER

James Hopkins
11020 Sky High Ridge
Lower Lake, CA 95457

NOTICE OF APPLICABILITY, WATER QUALITY ORDER WQ-2019-0001-DWQ, KOCHAGORN SINSUKTHAWORN, APN 122-300-010-000, LAKE COUNTY COUNTY

Kochagorn Sinsukthaworn of Infinity Cannabis Growth, LLC (hereafter "Discharger") submitted information through the State Water Resources Control Board's (State Water Board's) online portal on 21 November 2019, for discharges of waste associated with cannabis cultivation related activities. Based on the information provided, the Discharger self-certifies the cannabis cultivation activities are consistent with the requirements of the State Water Board *Cannabis Cultivation Policy- Principles and Guidelines for Cannabis Cultivation* (Policy), and the *General Waste Discharge Requirements and Waiver of Waste Discharge Requirements for Discharges of Waste Associated with Cannabis Cultivation Activities*, Order No. WQ-2019-0001-DWQ (General Order). This letter provides notice that the Policy and General Order are applicable to the site as described below. You are hereby assigned waste discharge identification (WDID) number **5S17CC422708**.

The Discharger is responsible for all applicable requirements in the Policy, General Order, and this Notice of Applicability (NOA), including submittal of all required reports. The Discharger is the sole person with legal authority to, among other things, change information submitted to obtain regulatory coverage under the General Order; request changes to enrollment status, including risk designation; and terminate regulatory coverage. The Central Valley Regional Water Quality Control Board (Central Valley Water Board) will hold the Discharger liable for any noncompliance with the Policy, General Order, and this NOA, including non-payment of annual fees.

Pursuant to the General Order and Policy, Kochagorn Sinsukthaworn of Infinity Cannabis Growth, LLC and James Hopkins (hereafter "Landowners") are ultimately responsible for any water quality degradation that occurs on or emanates from the

KARL E. LONGLEY SCD, P.E., CHAIR | PATRICK PULUPA, ESQ., EXECUTIVE OFFICER

364 Knollcrest Drive, Suite 205, Redding, CA 96002 | www.waterboards.ca.gov/centralvalley

property and for unauthorized water diversions. Accordingly, the Landowner, in addition to the Discharger, may be held responsible for correcting non-compliance.

1. FACILITY AND DISCHARGE DESCRIPTION

The information submitted by the Discharger states the disturbed area is equal to or greater than 2,000 square feet and less than 1 acre (43,560 square feet), no portion of the disturbed area is within the setback requirements, no portion of the disturbed area is located on a slope greater than 30 percent, and the cannabis cultivation area is less than 1 acre.

Based on the information submitted by the Discharger, the cannabis cultivation activities are classified as Tier 1, low risk.

2. SITE-SPECIFIC REQUIREMENTS

The Policy and General Order are available on the Internet at: <http://www.waterboards.ca.gov/cannabis>. The Discharger shall ensure that all site operating personnel know, understand, and comply with the requirements contained in the Policy, General Order, this NOA, and the Monitoring and Reporting Program (MRP, Attachment B of the General Order). Note that the General Order contains standard provisions, general requirements, and prohibitions that apply to all cannabis cultivation activities.

The application requires the Discharger to self-certify that all applicable Best Practicable Treatment or Control (BPTC) measures are being implemented, or will be implemented by the onset of the winter period (November 15 - April 1), following the enrollment date.

3. TECHNICAL REPORT REQUIREMENTS

The following technical report(s) shall be submitted by the Discharger as described below:

1. A *Site Management Plan* must be submitted by **19 February 2020**. For more information on the requirements to submit a *Site Management Plan*, see General Order Provision C.1.a, and Attachment A, Section 5. Attachment D of the General Order provides guidance on the contents of a *Site Management Plan*. Dischargers that cannot implement all applicable BPTC measures by the onset of the winter period, following their enrollment date, shall submit to the appropriate Central Valley Water Board a *Site Management Plan* that includes a time schedule and scope of work for use by the Central Valley Water Board in developing a compliance schedule as described in Attachment A of the General Order. You are not required to use a Qualified Professional for developing the *Site Management Plan*. However, you are required to submit the *Site Management Plan* to Central Valley Water Board staff for approval prior to any site development.

2. A *Site Closure Report* must be submitted 90 days prior to permanently ending cannabis cultivation activities and seeking to rescind coverage under the Conditional Waiver. The *Site Closure Report* must be consistent with the requirements of General Order Provision C.1.e., and Attachment A, Section 5. Attachment D of the General Order provides guidance on the contents of the *Site Closure Report*.

4. MONITORING AND REPORTING PROGRAM

The Discharger shall comply with the Monitoring and Reporting Program (MRP). Attachment B of the General Order provides guidance on the contents for the annual reporting requirement. Annual reports shall be submitted to the Central Valley Water Board by March 1 following the year being monitored. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Central Valley Water Board's Executive Officer or the State Water Board's Chief Deputy Director, or Deputy Director.

5. ANNUAL FEE

According to the information submitted, the discharge is classified as Tier 1, low risk with the current annual fee assessed at \$600. The fee is due and payable on an annual basis until coverage under this General Order is formally rescinded. To rescind coverage, the Discharger must submit a Notice of Termination, including a *Site Closure Report* at least 90 days prior to termination of activities and include a final MRP report.

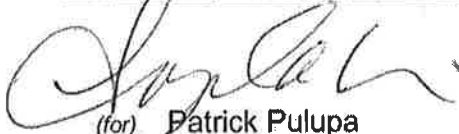
6. TERMINATION OF COVERAGE UNDER THE GENERAL ORDER & REGIONAL WATER BOARD CONTACT INFORMATION

Cannabis cultivators that propose to terminate coverage under the Conditional Waiver or General Order must submit a Notice of Termination (NOT). The NOT must include a *Site Closure Report* (see Technical Report Requirements above), and Dischargers enrolled under the General Order must also submit a final monitoring report. The Central Valley Water Board reserves the right to inspect the site before approving a NOT. Attachment C includes the NOT form and Attachment D of the General Order provides guidance on the contents of the *Site Closure Report*.

If the Discharger cannot comply with the General Order, or will be unable to implement an applicable BPTC measure contained in Attachment A by the onset of the winter period each year, the Discharger shall notify Central Valley Water Board staff by telephone at 530-224-4845 so that a site-specific compliance schedule can be developed.

13 December 2019

All monitoring reports, submittals, discharge notifications, and questions regarding compliance and enforcement should be directed to centralvalleyredding@waterboards.ca.gov or 530-224-4845.



(for) Patrick Pulupa
Executive Officer

JF: ch

cc via email: Kevin Porzio, State Water Resources Control Board, Sacramento
Mark Roberts, Lake County Planning Department, Lakeport

O. WASTE MANAGEMENT

Solid Waste Management Plan

The types of solid waste that will be generated from the proposed cultivation operation include gardening materials and wastes (such as used plastic seedling pots and spent plastic fertilizer/pesticide bags and bottles) and general litter from staff/personnel. All solid waste will be stored in bins with secure fitting lids, located directly adjacent to the cultivation area(s), the residential/office building, the shop, and the proposed Processing Facility. At no time should the bins be filled to a point that their lids cannot fit securely. Solid waste from the bins will be deposited into a trailer, (dump trailer), then hauled away by ICG staff to a Lake County Integrated Waste Management facility, at least every seven (7) days/weekly. The closest Lake County Integrated Waste Management facility to the proposed cultivation operation is the Eastlake Landfill. Most, if not all of the solid waste generated by ICG proposed cultivation operation can and will be deposited there. Before transporting solid waste to a solid waste disposal facility, ICG staff will record the volume (incubic feet) of solid waste generated. Additionally, solid waste will be weighed and the weight recorded before depositing it in/at a solid waste disposal facility. The "dump trailer" will be equipped with a secure fitting cover, to prevent solid waste from escaping the trailer while in transport. ICG will maintain records onsite for at least 5 years from the date the waste was generated, and is willing to provide a copy of their solid waste disposal records and receipts to County Officials quarterly or whenever requested.

The following estimates for the amount of solid waste that will be generated from the proposed cultivation operation are based on the existing Article 72 compliant medicinal cultivation operation. Anticipated Annual Amount Generated (AAG) and Anticipated Max Daily Generated (MDG) for the following:

- Paper -AAG: 30 lbs. MDG: 2 lbs.
- Glass -AAG: 240 lbs. MDG: 10 lbs.
- Metal – AAG: <1 lb. MDG: <1 lb.
- Electronics- AAG: 7.5 lbs. MDG: 7 lbs.
- Plastic –AAG: 300 lbs. MDG: 10 lbs.
- Organics AAG: none MDG: none (All organics to be composted/fermented)
- Inert– AAG: <1 lb. MDG: <1 lb.
- Household hazardous waste – AAG: <5 lbs. MDG: <1 lb.
- Special waste –AAG:<1 lb. MDG: <1 lb.
- Mixed residue – AAG: <1 lb. MDG: <1 lb.

ICG will comply with Cannabis Waste Disposal Regulations to operation where all materials and inputs needed to cultivate and process cannabis are obtained or generated on the Project Property. ICG will implement integrated pest management practices, compost/ferment all organic wastes onsite generate energy/electricity onsite (solar and wind), cultivate and raise shrimp and chickens for their manure. For a few years, ICG will have to import materials and inputs necessary to cultivate and process cannabis until the

cultivation operation is fully established. ICG will work with their suppliers to reduce the amount of packaging associated with the materials and inputs brought onsite taking into account that some products (such as pesticides) have stringent packaging requirements. One of the best ways for ICG to reduce the amount of packaging material brought onsite is through bulk purchasing/packaging. The proposed cultivation area(s) will allow ICG to reduce their per plant/square foot solid waste generation through the use of bulk purchasing, shipping, and packaging.

Hazardous Waste Management plan

Infinity cannabis growth, LLC manager will be trained on how to appropriately and safely use potentially hazardous equipment/machinery, such as tractors and tillers before using them to avoid/prevent injuries. ICG personnel will be required to clean and sanitize the buildings of the proposed cultivation operation on a regular basis. Personal Protective Equipment (PPE) will be available for personnel, when cleaning/sanitizing potentially hazardous unsanitary areas. ICG will provide personnel access to the existing residential/office building at all times for the use of its toilets, potable drinking water, and hand-washing facilities. The Hazardous Materials Business Plan below addresses hazards associated with agricultural and processing chemicals.

Hazardous Materials Business plan

The Lake County Division of Environmental Health is the Certified Unified Program Agency(CUPA) for all of Lake County, including the Project Property, dealing with hazardous waste and hazardous materials. The Lake County Fire Protection District are most likely to be the first responders in the event of a hazardous materials incident. ICG proposed cannabis cultivation operation will not generate hazardous waste, and not be harmful.

Agricultural and Processing Chemicals

Hazardous agricultural and processing chemicals will be stored and locked
All Chemicals or Flammable products will be stay in wood shed

List of Flammable/Petroleum Products:

- Gasoline- no more than 20 gallons at any given time
- Diesel Fuel -no more than 20 gallons at any given time
- Oils/Lubricants-no more than 2 gallons at any given time
- Isopropyl alcohol – no more than 5 gallons at any given time

All petroleum products will be stored undercover and in State of California-approved containers with secondary containment within the proposed agricultural accessory structure. Isopropyl alcohol is used to sanitize equipment used for processing cannabis. Isopropyl alcohol will be stored within a secure cabinet within the proposed Processing Facility.

List of Fertilizers Products

- BioRHIZOTONIC
- BIOCANNA Bio Vega

- BIOCANNA Bio Flores
- PK 13/14

BIOCANNA products are organic and listed with both OMRI and Eco Union.

products are 100% organic. It is certified by Control Union Certifications for use in organic growing.

the aim of organic farming is to produce in a sustainable way and in harmony with nature. To realize and maintain this, organic farming is based on three basic principles:

4. No use of chemical pesticides
5. No use of chemical fertilizer
6. Aiming at a wide biodiversity

Chemical Incident Response

ICG emergency spill response will be vital responsibility for fuel spills, chemical spills, DOT hazardous materials spills (such as mercury and explosives) and EPA hazardous waste spills. Fast, professional response is also critical to high-pressure tasks such as identification of unknown substances, spill containment, proper waste handling and clean-up. In the aftermath of a natural disaster, waste and environmental concerns are only a part of a larger, complicated picture. Every hazardous waste emergency response situation must be managed with a commitment to safety and full compliance with all applicable regulations, from the initial response to clean-up and ultimate closeout of all paperwork and reporting. Stericycle Environmental Solutions leverages a nationwide network of experts, facilities, equipment and subcontractors to provide clients with one-call simplicity for any hazardous waste emergency response or disaster recovery need. An emergency response team will be on-site within two hours of the initial call to our 24/7 emergency call center. All emergency response personnel and subcontractors are required to have at least a 40-hour OSHA certification and are regularly audited, qualified and evaluated.

Worker Safety

ICG managerial staff will conduct onsite safety audits, policy writing and staff training on all Occupational Safety and Health Administration (OSHA) workplace safety protocols. Materials Safety Data Sheets (MSDS/SDS) for all agricultural chemicals used by ICG will be stored within the materials storage shed, and available for personnel to reference at any time. Personnel will be trained by ICG managerial staff on how to appropriately use agricultural and processing chemicals and equipment, before being allowed to use them. When using/preparing agricultural and/or processing chemicals and equipment, personnel will be required to use personal protective equipment (PPE) consistent with the manufacturer's and/or MSDS/SDS recommendations for the product/equipment they're using/preparing. PPE to be used by staff include safety glasses, gloves, dust masks, boots, pants and long-sleeved shirts.

Cannabis Vegetative Material Waste Management

Cannabis Waste:

"Cannabis waste" is an organic waste, as defined in Section 42649.8(c) of the Public Resources Code. Anticipated cannabis waste generated from the proposed cannabis cultivation operation is limited to cannabis plant stems. It is anticipated that all other parts of cannabis plants cultivated at this site will be transferred to a State of California-licensed Distributor for distribution to State of California-licensed Manufacturers and Retailers. ICG anticipates that the proposed cannabis cultivation operation will generate approximately 100 pounds of dried cannabis waste each cultivation season.

Cannabis Waste Composting:

All cannabis waste generated from the proposed cultivation operation will be composted onsite and in compliance with Title 14 of the California Code of Regulations at Division 7, Chapter 3.1. ICG will use Bokashi composting methods to quickly and efficiently convert cannabis waste into an organic soil amendment and nutrient-rich tea. Bokashi composting is an anaerobic process that relies on inoculated bran to ferment organic wastes. Cannabis waste will be ripped/shredded and placed in plastic containers ("Bokashi buckets"), and then covered with a handful of inoculated bran. When a plastic container is full, it will be sealed shut and stored on an existing concrete slab adjacent to the onsite residential/office building for 12-14 days. Every other day the leachate that will be collected, and later turned into a compost tea that is applied to the cannabis plants of the proposed cultivation operation. After the cannabis waste material has composted/fermented for 12-14 days, the resulting compost will be stored in the designated composting area of the proposed cultivation operation, until it is incorporated into the soils of the proposed cultivation area(s) as a soil amendment.

Cannabis Waste Records/Documentation

Cannabis waste generated from the proposed cannabis cultivation operation will be identified, weighed, and tracked while onsite. All required information pertaining to cannabis waste will be entered into the State of California Cannabis Track-and-Trace (CCTT) system. ICG will maintain accurate and comprehensive records regarding cannabis waste generation that will account for, reconcile, and evidence all activity related to the generation or disposition of cannabis waste. All records will be kept on-site for seven (7) years and will be made available during inspections.

Growing Medium Management

The growing medium of the cannabis cultivation area(s) will be composted on site. ICG will use Bokashi composting methods to quickly and efficiently convert cannabis waste into an organic soil amendment and nutrient-rich tea. Bokashi composting is an anaerobic process that relies on inoculated bran to ferment organic wastes. Cannabis waste will be ripped/shredded and placed in plastic containers ("Bokashi buckets") and then covered with a handful of inoculated bran. When a plastic container is full, it will be sealed shut and stored on an existing concrete slab adjacent to the onsite residential/office building for 12-

14 days. Every other day the leachate that will be collected and later turned into a compost tea that is re-applied to the cannabis plants of the proposed cultivation operation. ICG approximately 100 pounds of dried medium cannabis waste each cultivation season.

Cannabis Waste Records/Documentation

Cannabis waste generated from the proposed cannabis cultivation operation will be identified, weighed, and tracked while onsite. All required information pertaining to cannabis waste will be entered into the State of California Cannabis Track-and-Trace (CCTT) system. ICG will maintain accurate and comprehensive records regarding cannabis waste generation that will account for, reconcile, and evidence all activity relate to the generation or disposition of cannabis waste. All records will be kept on-site for seven (7) years and will be made available during inspections.

Date of issue: 21.02.2013

Version No: 1.1

Revision date: 08.02.2012.

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product identifier

Trade name: RHIZOTONIC

Synonym(s): -

Relevant identified uses of the substance or mixture and uses advised

against: Root stimulator.

Product

category: Product Category 12 (PC12 Fertilizers),
Sector of Use 21 (SU21 Consumer uses).

Details of the supplier of the safety data sheet

Manufacturer/supplier:

CANNA B.V.
P.O. Box 161
4900 AD Oosterhout
The Netherlands

Tel: +31 (0)162-494843

Fax: +31 (0)162-495999

Further information obtainable from:

Contact person: N. Linton

Tel.: +31 (0) 162-68 00 12

Email: msds@canna.com

Working hours

(business days): 09:00-17:00.

Emergency telephone number:

The Netherlands: National Poison Information Centre:

+31 (0) 30 247 88 88

Belgium: Belgian Poison Centre:

+32 (0) 70 245 245

United Kingdom: UWIC:

+44 (0) 29 204 16388

SECTION 2: Hazards identification

Classification of the substance or mixture

Classification in accordance with Regulation (EC) no. 1272/2008

Void.

Label elements and precautionary statement

Hazard pictograms:

-

Signal word: -

Hazard statements:

-

Precautions:

-

Classification in accordance with Directive 67/548/EEC or Directive 1999/45/EC

Void.

Label elements

Hazard symbols:

-

Classification of the

labelling: -

Risk phrase(s): -

Safety advice: -

Date of issue: 21.02.2013

Version-No: 1.1

Revision date: 08.02.2012.

Trade name: RHIZOTONIC**Hazard-determining components for labelling:** -**Other hazards**

Void.

Results of PBT and vPvB assessment**PBT:** No.**vPvB:** No.

SECTION 3: Composition/information on ingredients

Chemical characterization: Mixture.

Description: Liquid product based on brown algae, watery solution with polyelectrolyte properties, cation exchanger.
Preparation contains among other ingredients galacturonic acid (CAS# 685-73-4, EC# 211-682-6), iodine, trace elements, salts.

Hazardous ingredients**Iodine.****CAS#:** 7553-56-2**EC#:** 231-442-4**Index#:** -**REACH reg.#:** -**Content (W/W):** No data.**Danger:**

1999/45/EC: Xn; R20/22 - N; R50.

1272/2008/EC: Acute Tox. 4; H312, H332 - Aquatic Acute 1; H400.

Full text of each relevant R-, H- and EUH- phrase(s) can be found in section 16.

SECTION 4: First aid measures

Description of first aid measures**General information:**

Remove immediately all contaminated clothing.
Consult a physician in case of persistent complaints.

Inhalation:

Remove victim to fresh air.

Skin contact:

Immediately wash off with plenty of water.

Eye contact:

Remove contact lenses, if present, and immediately rinse eyes while holding eyelids open for a sufficient period of time (at least 15 minutes) with lukewarm water. Help the victim with the rinsing process. If symptoms persist after rinsing, consult a physician or an ophthalmologist.

Ingestion:

Rinse mouth and drink plenty of water. Consult a physician if symptoms appear.

Most important symptoms and effects, both acute and delayed**Inhalation:**

No information available on symptoms. Limited or no immediate danger expected.

Skin contact:

No information available on symptoms. Limited or no immediate danger expected.

Eye contact:

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Revision date: 08.02.2012.

Trade name: RHIZOTONIC

Severe irritation.

Ingestion:

No information available on symptoms. Limited or no immediate danger expected.

Indication of any immediate medical attention and special treatment needed

Symptomatic treatment and supportive therapy as prescribed.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media:

CO₂, extinguishing powder or water jet. Fight larger fires with water spray.

Foam.

Sand.

Adapt extinguishing measures to suit the environment.

Unsuitable extinguishing media:

None.

Special hazards arising from the substance or mixture

None.

Advice for firefighters

Special protective clothing:

Wear self-contained breathing apparatus.

Other information

None.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Ensure sufficient ventilation.

Wear personal protective equipment.

Environmental precautions

Do not allow large quantities to reach sewage/surface water/groundwater.

Methods and material for containment and cleaning up

Soak up immediately with absorbent material (sand, dry earth).

Recycle, if possible.

Collect in suitable containers for disposal.

Then flush away residue with plenty of water.

Reference to other sections

Information regarding safe handling – see section 7.

Information regarding personal protective equipment – see section 8.

Information regarding disposal – see section 13.

SECTION 7: Handling and storage

Date of issue: 21.02.2013

Version-No: 1.1

Revision date: 08.02.2012.

Trade name: RHIZOTONIC

Handling

Precautions for safe handling:

Open and handle package with care.

Wear suitable protective clothing.

Ventilation is recommended.

Do not eat or drink during use.

Information about fire - and explosion protection:

No specific requirements.

Conditions for safe storage, including any incompatibilities

Storage:

Keep container tightly closed in a well-ventilated area.

Requirements to be met by storerooms and receptacles:

Preferably keep in the original packaging.

Keep in a dark place.

Store in a frost-free environment.

Suitable packaging material: Polyethylene, stainless steel.

Suitable material for tanks and pipelines: No data.

Unsuitable material for tanks and pipe conduits: No data.

Information about storage in one common storage facility:

Install partitions in the drip tray to prevent acidic and alkaline fertilisers from coming into contact with one other.

Store separately from strong acids.

Further information about storage conditions:

Recommended storage temperature 10 - 30 °C.

Specific end use(s)

No further relevant information available.

SECTION 8: Exposure controls/personal protection

Control parameters

No data.

Exposure controls

Personal protective equipment:

Remove immediately all contaminated clothing.

Avoid contact with the eyes.

General protective and hygienic measures:

Keep away from foodstuffs and beverages.

Do not eat, drink or smoke when using this product.

The usual precautionary measures are to be adhered to when handling chemicals.

Respiratory protection:

Not required with normal ventilation, respiratory protection in case of insufficient ventilation.

Hand protection:



Safety gloves: use is recommended but not mandatory.

Eye protection:



Use close-fitting safety goggles with risk of spatter.

Body protection:

Wear suitable protective work clothing (in case of splash risk).

Measuring procedures:

Date of issue: 21.02.2013

Version-No: 1.1

Revision date: 08.02.2012.

Trade name: RHIZOTONIC

No data.

Environmental exposure controls:
No specific requirements.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

General information

Appearance

Form:	Liquid.
Colour:	Brown.
Odour:	Salty.
Odour threshold:	Not determined.
pH-value:	< 11 (undiluted).

Change in condition

Melting point/melting range:	Not determined.
Boiling point/boiling range:	Not determined.
Flash point:	> 93 °C.

Flammability (solid, gas): Not applicable.

Auto-ignition temperature: Not determined.

Explosion hazard: Not determined.

Explosive limits

Lower:	Not determined.
Upper:	Not determined.

Vapour pressure at 20°C: Not determined.

Relative density: Approx. 1.000 (water = 1).

Vapour density: Not determined.

Evaporation rate: Not determined.

Solubility in/miscibility with water:

Fully.

Partition coefficient:

n-octanol/water: Not determined.

Viscosity

Dynamic at 20°C: Not determined.

Kinematic: Not determined.

Other information

No further relevant information available.

SECTION 10: Stability and reactivity

Reactivity

Chemical stability:

The product is stable if stored and handled as prescribed.

Thermal decomposition/Conditions to be avoided:

The product is stable if used as prescribed. Avoid storing at high temperatures (> 35 °C) to prevent degradation of the material or pressure build-up. Avoid low temperatures (< 10 °C) to prevent crystallization from occurring. Material is susceptible to frost.

Possibility of hazardous reactions

No data.

Conditions to avoid

Prevent evaporation in a non-ventilated environment. Protect against heat and direct sunlight. Protect against frost.

Date of issue: 21.02.2013

Version-No: 1.1

Revision date: 08.02.2012.

Trade name: RHIZOTONIC

Incompatible materials

No data.

Hazardous decomposition products

No hazardous decomposition products are formed if stored under normal conditions.

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity from the components:

No data.

The following health risk assessment is based on an assessment of the various ingredients in the product.

Primary irritant effect:

on the skin:

No further relevant information available.

on the eye:

No further relevant information available.

Germ cell mutagenicity:

Not classified.

Reproductive and developmental toxicity:

Not classified.

Sensitisation:

No sensitising effects known.

CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction):

Not classified.

Other information:

No further relevant information available.

SECTION 12: Ecological information

Toxicology information

Ecotoxicity from the components:

No data.

The following ecological risk assessment is based on an assessment of the various ingredients in the product.

Persistence and degradability

Expected to be biodegradable.

Behaviour in environmental compartments

Bioaccumulative potential:

Bioaccumulation in organisms is not expected.

Mobility in soil:

No further relevant information available.

Further ecological information

General information:

Date of issue: 21.02.2013

Version-No: 1.1

Revision date: 08.02.2012.

Trade name: RHIZOTONIC

Water hazard class N.W.G (German regulation) (Self-assessment): not hazardous to water. Do not discharge undiluted product into groundwater or surface water.

Results of PBT and vPvB assessment

The mixture does not meet all of the assessment criteria for persistence, bioaccumulation and toxicity and hence is not considered to be PBT or vPvB.

Other adverse effects

No data.

SECTION 13: Disposal considerations

Waste treatment methods

Recommendation:

May be brought to a supervised incineration plant in compliance with local regulations.

EC Regulation for Disposal of Waste (EWC):

06 10 01 WASTES FROM INORGANIC CHEMICAL PROCESSES, waste from nitrogen chemical processes and fertilizer manufacture.

Uncleaned packaging

Recommendation:

Disposal must be made according to official regulations. Empty the packaging with care. Do not contaminate soil, water or environment with the waste container. Comply with local regulations with regard to the recovery or disposal of waste.

SECTION 14: Transport information

Land transport ADR/RID (cross-border)

ADR/GGVSEB class:	Not a dangerous good according to the transport regulations.
Hazard identification number:	-
UN number:	-
Packing group:	-
Label:	-
Special marking:	-
Proper shipping name from the UN Model Regulations:	-
Tunnel restriction code:	-

Inland shipping ADN/ADR

ADN/R-class:	-
UN number:	-
Subsidiary risk	-
Environmental hazards:	-
CMR properties:	-
Buoyancy:	-

Maritime transport IMDG

IMDG-class:	-
UN number:	-
Label:	-
Packing group:	-
EMS number:	-
Marine pollutant:	-
Proper technical name:	-

Date of issue: 21.02.2013

Version-No: 1.1

Revision date: 08.02.2012.

Trade name: RHIZOTONIC**Air transport ICAO-TI and IATA-DGR**

ICAO/IATA-class: -
UN number: -
Label: -
Packing group: -
Proper technical name: -

Environmental hazards

None.

Special precautions for user

None.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

No further relevant information available.

SECTION 15: Regulatory information**Safety, health and environmental regulations/legislation specific for the substance or mixture****National regulations:** -**EU regulations and directives which affect this mixture (not yet directly or indirectly mentioned):**

Directive 89/686/EEC Personal protective equipment.
Directive 98/24/EC Risks related to chemical agents at work.
Regulation 2003/2003/EC Concerning fertilisers.

Chemical safety assessment

A chemical safety assessment has not been carried out.

SECTION 16: Other information

This information is based on the current state of our knowledge. It should not be construed as any guarantee of product characteristics, nor does it establish a legally valid contractual relationship.

List of relevant R-, H- and EUH-phrases from sections 2 and 3

R20/22 Harmful by inhalation and if swallowed.
R50 Very toxic to aquatic organisms.
H312 Harmful in contact with skin.
H332 Harmful if inhaled.
H400 Very toxic to aquatic life.

Document history**Printed on:** 3 April 2013.**Previous edition:** 08.02.2012.**Version:** 1.1.**Change:** Ingredient name.**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route
(European Agreement concerning the International Carriage of Dangerous Goods by Road)
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

Date of issue: 21.02.2013

Version-No: 1.1

Revision date: 08.02.2012.

Trade name: RHIZOTONIC

IMDG:	International Maritime Code for Dangerous Goods
IATA:	International Air Transport Association
IATA-DGR:	Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
ICAO:	International Civil Aviation Organization
ICAO-TI:	Technical Instructions by the "International Civil Aviation Organization" (ICAO)
P:	Marine Pollutant
GHS:	Globally Harmonized System of Classification and Labelling of Chemicals
CAS:	Chemical Abstracts Service (division of the American Chemical Society)
EC50:	Half maximal effective concentration
LC50:	Lethal concentration, 50 percent
LD50:	Lethal dose, 50 percent
OEL:	Occupational Exposure Limit
NOEC:	No Observed Effect Concentration
vPvB:	Very Persistent and Very Bioaccumulative
PBT:	Persistent, Bioaccumulative and Toxic substance
EWC:	European Waste Catalogue
TWA:	Time-Weighted Average, limit value pertaining to the MAC value
DNEL:	Derived No-Effect Level
DMEL:	Derived Minimal Effect Level
PNEC:	Predicted No-Effect Concentration

Date of issue: 27.12.2011

Version-No: 1.0

Revision date: Initial version.

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product identifier

Trade name: TERRA VEGA

Synonym(s): -

Relevant identified uses of the substance or mixture and uses advised against:

Liquid NPK fertilizer.

Product

category: Product Category 12 (PC12 Fertilizers),
Sector of Use 21 (SU21 Consumer uses).

Details of the supplier of the safety data sheet

Manufacturer/supplier:

CANNA B.V.
P.O. Box 161
4900 AD Oosterhout
The Netherlands

Tel.: +31 (0) 162-49 48 43

Fax: +31 (0) 162-49 59 99

Further information obtainable from:

Contact person: N. Linton

Tel.: +31 (0) 162-68 00 12

Email: msds@canna.com

Working hours

(business days): 09:00-17:00.

Emergency telephone number:

The Netherlands: National Poison Information Centre:

+31 (0) 30 247 88 88

Belgium: Belgian Poison Centre:

+32 (0) 70 245 245

United Kingdom: UWIC:

+44 (0) 29 204 16388

SECTION 2: Hazards identification

Classification of the substance or mixture

Classification in accordance with Regulation (EC) no. 1272/2008

Eye Irrit. 2 H319

Label elements and precautionary statement

Hazards pictograms:



Signal word: Warning.

Hazard statements:

H319 Causes serious eye irritation.

Precautions:

P102 Keep out of reach of children.

P264 Wash hands thoroughly after handling this product.

P280 Wear eye protection.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337 + P313 If eye irritation persists: Get medical advice/attention.

Date of issue: 27.12.2011

Version-No: 1.0

Revision date: Initial version.

Trade name: TERRA VEGA**Classification in accordance with Directive 67/548/EEC or Directive 1999/45/EC**

Void.

Label elements**Hazard symbols:****Classification of the****labelling:** -**Risk phrase(s):** -**Safety advice:** -**Hazard-determining components for****labelling:** Ammonium nitrate.**Other hazards**

Void.

Results of PBT and vPvB assessment**PBT:** No.**vPvB:** No.

SECTION 3: Composition/information on ingredients

Chemical characterization: Mixture.**Description:** Preparation based on i.a. water, potassium nitrate, magnesium nitrate, ammonium nitrate, phosphoric acid and nitric acid.**Hazardous ingredients****Potassium nitrate****CAS#:** 7757-79-1**EC#:** 231-818-8**Index#:** -**REACH reg.#:** -**Concentration (W/W):**
5 - 10 %**Danger:****1999/45/EC:** O; R8.**1272/2008/EC:** Ox. Sol. 2; H272.**Magnesium nitrate****CAS#:** 10377-60-3**EC#:** 233-826-7**Index#:** -**REACH reg.#:** -**Concentration (W/W):**
5 - 10 %**Danger:****1999/45/EC:** O; R8.**1272/2008/EC:** Ox. Sol. 2; H272.**Ammonium nitrate****CAS#:** 6484-52-2**EC#:** 229-347-8**Index#:** -**REACH reg.#:** -**Concentration (W/W):**
5 - 10 %**Danger:**

Date of issue: 27.12.2011

Version-No: 1.0

Revision date: Initial version.

Trade name: TERRA VEGA

1999/45/EC: O; R8 - Xi; R36.
1272/2008/EC: Ox. Sol. 2; H272 - Eye Irrit. 2; H319.

Phosphoric acid 59 %

CAS#: 7664-38-2
EC#: 231-633-2
Index#: 015-011-00-6
REACH reg.#: -
Concentration (W/W):
1 - 5 %

Danger:

1999/45/EC: C; R34.
1272/2008/EC: Skin Corr. 1B; H314.

Nitric acid 38 %

CAS#: 7697-37-2
EC#: 231-714-2
Index#: 007-004-00-1
REACH reg.#: -
Concentration (W/W):
0.1 - 1 %

Danger:

1999/45/EC: O; R8 - C; R35.
1272/2008/EC: Ox. Liq. 3; H272 - Skin Corr. 1A; H314.

Full text of each relevant R-, H- and EUH- phrase(s) can be found in section 16.

SECTION 4: First aid measures

Description of first aid measures

General information:

Remove victim from danger zone and place in lying position.

In case of irregular breathing or respiratory arrest provide artificial respiration.

Remove immediately all contaminated clothing.

Substance is harmful to tissue after continuous contact. Rinsing immediately following exposure can limit injury.

Inhalation:

Remove to fresh air.

If the victim is not breathing, apply artificial respiration.

Skin contact:

Immediately wash with plenty of water and soap. Seek professional medical treatment in case of persistent complaints.

Eye contact:

Remove contact lenses, if present, and immediately rinse eyes while holding eyelids open for a sufficient period of time (at least 15 minutes) with lukewarm water. Help the victim with the rinsing process. Then immediately consult a physician/ophthalmologist.

Ingestion:

Rinse mouth immediately with water (if conscious), and then drink plenty of water. Do not induce vomiting (only under the supervision of a physician) and immediately consult a physician or take victim to hospital (show physician packaging, label or SDS). Place unconscious person on the side in the recovery position. Loosen tight clothing such as a shirt collar, tie, belt or waistband. Keep at rest.

Most important symptoms and effects, both acute and delayed**Inhalation:**

Exposure to vapour concentrations of component dusts higher than the MAC value can be harmful to the health. Potential health effects include: burning sensation, coughing, difficulty breathing, loss of consciousness. Effects may be delayed. Inhalation of aerosol and/or mist may cause pneumonia and/or lung oedema, but only after initial corrosive effects on the mucous membranes of the eyes and/or upper airways have become manifest.

Skin contact:

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Slightly irritating to the skin. Signs and symptoms of skin irritation may include redness and a yellow discolouration. Contains phosphoric acid which may be absorbed through the skin.

Eye contact:

May cause irreversible damage to the eyes. Corrosive. Redness.

Ingestion:

Stomach ache. Irritation of gastro-intestinal mucosa.

Indication of any immediate medical attention and special treatment needed

Symptomatic treatment and supportive therapy as prescribed. Symptomatic treatment (decontamination, control of vital functions). No specific antidote known. To prevent pulmonary oedema from severe exposure: corticosteroid-containing dosing aerosol.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media:

CO₂, extinguishing powder or water jet. Fight larger fires with water spray.

Foam.

Sand.

Adapt extinguishing measures to suit the environment.

Unsuitable extinguishing media:

Powerful water jet.

Special hazards arising from the substance or mixture

During heating or in case of fire, poisonous gases may be produced.

May be released in event of fire:

Nitrogen oxides (NO_x).

Ammonia (NH₃).

Phosphorus oxides.

Advice for firefighters

Special protective clothing:

Wear self-contained breathing apparatus.

Other information

Cool exposed containers with water spray.

Collect contaminated extinguishing water separately, do not allow to reach sewage.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Ensure sufficient ventilation.

Wear personal protective equipment.

Keep dried material away from sources of ignition.

Keep unprotected persons at a distance.

Environmental precautions

Do not allow large quantities to reach sewage system/surface water/groundwater.

Prevent release in effluents, wells or cellars.

Methods and material for containment and cleaning up

Soak up immediately with absorbent material (sand, diatomaceous earth, acid binder, universal binder, sawdust).

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Dispose of absorbed material according to regulations.
Remove contaminated material as waste according to section 13.

Reference to other sections

Information regarding safe handling – see section 7.
Information regarding personal protective equipment – see section 8.
Information regarding disposal – see section 13.

SECTION 7: Handling and storage

Handling

Precautions for safe handling:

Provide adequate ventilation/extraction in the workplace.
Open and handle package with care.
Avoid formation of aerosols.

In case of expert use, no special measures are required.

Information regarding fire and explosion risk:

Keep away from ignition sources - do not smoke.

Conditions for safe storage, including any incompatibilities

Storage:

Rinse/clean equipment prior to maintenance activities.
Ensure the safety of the tank installation to limit risks of exposure.
Regularly check the installation for correct operation.
Provide a liquid-resistant floor or store materials in packaging in acid-proof drip-trays.
Make the content of the dip-tray equal to the content of the largest package plus 10% of the other packages.
Restrict access to the storage location to authorised personnel in case of risk of exposure.

Close containers after each use.

Handle empty containers as if they were full.

Requirements to be met by storerooms and receptacles:

Keep only in the original container.

Keep in a dark place.

Store in a frost-free environment.

Protect from heat and direct sunlight.

Suitable packaging material: Polyethylene.

Suitable material for tanks and pipelines: Stainless steel, PVC.

Information about storage in one common storage facility:

Install partitions in the drip tray to prevent acidic and alkaline fertilisers from coming into contact with one other.

Other information regarding storage requirements:

Keep tanks / packing hermetically closed.

Keep in a cool place.

Recommended storage temperature 10 - 30 °C.

Specific end use(s)

No further relevant information available.

SECTION 8: Exposure controls/personal protection

Control parameters

Ingredients with limit values that require monitoring at the workplace:

Product information: 7757-79-1	Potassium nitrate
TWA 8 h	mg/m ³ (ppm) 5 (-) inhalable dust

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Product information: 7697-37-2	Nitric acid	
TWA 15 min.	mg/m ³ (ppm)	2.6 (1) 2006/15/EC
Product information: 7664-38-2	Phosphoric acid	
TWA 8 h	mg/m ³ (ppm)	1 (1.3) 2000/39/EC
TWA 15 min.		2 (2.6) 2000/39/EC

Dangerous ingredients with DN(M)EL:

Product information: 7757-79-1 Potassium nitrate	Exposure	Value	Unit	Population / Effects
DN(M)EL	Short-term dermal	-	mg/kg bw/day	Workers Local
DN(M)EL	Short-term inhalation	-	mg/m ³	Workers Local
DN(M)EL	Long-term dermal	20.8	mg/kg bw/day	Workers Systemic
DN(M)EL	Long-term inhalation	36.7	mg/m ³	Workers Systemic
DN(M)EL	Long-term dermal	-	mg/kg bw/day	Workers Local
DN(M)EL	Long-term inhalation	-	mg/m ³	Workers Local
DN(M)EL	Short-term dermal	-	mg/kg bw/day	General population Local
DN(M)EL	Short-term inhalation	-	mg/m ³	General population Local
DN(M)EL	Long-term dermal	12.5	mg/kg bw/day	General population Systemic
DN(M)EL	Long-term inhalation	10.9	mg/m ³	General population Systemic
DN(M)EL	Long-term oral	12.5	mg/kg bw/day	General population Systemic
DN(M)EL	Long-term dermal	-	mg/kg bw/day	General population Local
DN(M)EL	Long-term inhalation	-	mg/m ³	General population Local

Dangerous ingredients with DN(M)EL:

Product information: 10377-60-3 Magnesium nitrate	Exposure	Value	Unit	Population / Effects
DN(M)EL	Short-term dermal	-	mg/kg bw/day	Workers Local
DN(M)EL	Short-term inhalation	-	mg/m ³	Workers Local
DN(M)EL	Long-term dermal	20.8	mg/kg bw/day	Workers Systemic
DN(M)EL	Long-term inhalation	36.7	mg/m ³	Workers Systemic
DN(M)EL	Long-term dermal	-	mg/kg bw/day	Workers Local
DN(M)EL	Long-term inhalation	-	mg/m ³	Workers Local
DN(M)EL	Short-term dermal	-	mg/kg bw/day	General population

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				Local
DN(M)EL	Short-term inhalation	-	mg/m ³	General population Local
DN(M)EL	Long-term dermal	12.5	mg/kg bw/day	General population Systemic
DN(M)EL	Long-term inhalation	10.9	mg/m ³	General population Systemic
DN(M)EL	Long-term oral	12.5	mg/kg bw/day	General population Systemic
DN(M)EL	Long-term dermal	-	mg/kg bw/day	General population Local
DN(M)EL	Long-term inhalation	-	mg/m ³	General population Local

Dangerous ingredients with DN(M)EL:

Product information: 6484-52-2 Ammonium nitrate	Exposure	Value	Unit	Population / Effects
DN(M)EL	Short-term dermal	-	mg/kg bw/day	Workers Local
DN(M)EL	Short-term inhalation	-	mg/m ³	Workers Local
DN(M)EL	Long-term dermal	21.3	mg/kg bw/day	Workers Systemic
DN(M)EL	Long-term inhalation	37.6	mg/m ³	Workers Systemic
DN(M)EL	Long-term dermal	-	mg/kg bw/day	Workers Local
DN(M)EL	Long-term inhalation	-	mg/m ³	Workers Local
DN(M)EL	Short-term dermal	-	mg/kg bw/day	General population Local
DN(M)EL	Short-term inhalation	-	mg/m ³	General population Local
DN(M)EL	Long-term dermal	12.8	mg/kg bw/day	General population Systemic
DN(M)EL	Long-term inhalation	11.1	mg/m ³	General population Systemic
DN(M)EL	Long-term oral	12.8	mg/kg bw/day	General population Systemic
DN(M)EL	Long-term dermal	-	mg/kg bw/day	General population Local
DN(M)EL	Long-term inhalation	-	mg/m ³	General population Local

Dangerous ingredients with DN(M)EL:

Product information: 7664-38-2 Phosphoric acid	Exposure	Value	Unit	Population / Effects
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Trade name: **TERRA VEGA**

DN(M)EL	Short-term dermal	-	mg/kg bw/day	Workers Local
DN(M)EL	Short-term inhalation	-	mg/m ³	Workers Local
DN(M)EL	Long-term dermal	-	mg/kg bw/day	Workers Systemic
DN(M)EL	Long-term inhalation	-	mg/m ³	Workers Systemic
DN(M)EL	Long-term dermal	-	mg/kg bw/day	Workers Local
DN(M)EL	Long-term inhalation	2.92	mg/m ³	Workers Local
DN(M)EL	Short-term dermal	-	mg/kg bw/day	General population Local
DN(M)EL	Short-term inhalation	-	mg/m ³	General population Local
DN(M)EL	Long-term dermal	-	mg/kg bw/day	General population Systemic
DN(M)EL	Long-term inhalation	-	mg/m ³	General population Systemic
DN(M)EL	Long-term oral	-	mg/kg bw/day	General population Systemic
DN(M)EL	Long-term dermal	-	mg/kg bw/day	General population Local
DN(M)EL	Long-term inhalation	0.73	mg/m ³	General population Local

Dangerous ingredients with DN(M)EL:

Product information: 7697-37-2	Exposure	Value	Unit	Population / Effects
Nitric acid				
DN(M)EL	Short-term dermal	-	mg/kg bw/day	Workers Local
DN(M)EL	Short-term inhalation	2.6	mg/m ³	Workers Local
DN(M)EL	Long-term dermal	-	mg/kg bw/day	Workers Systemic
DN(M)EL	Long-term inhalation	1.3	mg/m ³	Workers Systemic
DN(M)EL	Long-term dermal	-	mg/kg bw/day	Workers Local
DN(M)EL	Long-term inhalation	-	mg/m ³	Workers Local
DN(M)EL	Short-term dermal	-	mg/kg bw/day	General population Local
DN(M)EL	Short-term inhalation	1.3	mg/m ³	General population Local
DN(M)EL	Long-term dermal	-	mg/kg bw/day	General population Systemic
DN(M)EL	Long-term inhalation	-	mg/m ³	General population Systemic

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DN(M)EL	Long-term oral	-	mg/kg bw/day	General population Systemic
DN(M)EL	Long-term dermal	-	mg/kg bw/day	General population Local
DN(M)EL	Long-term inhalation	0.65	mg/m ³	General population Local

Dangerous ingredients with PNEC:

Product information: 7757-79-1 Potassium nitrate	Value	Unit	Compartment
PNEC	0.45	mg/l	Fresh water
PNEC	0.045	mg/l	Marine water
PNEC	4.5	mg/l	Intermittent releases
PNEC	18	mg/l	STP (sewage treatment plant)
PNEC	-	mg/kg dw	Sediment fresh water
PNEC	-	mg/kg dw	Sediment marine water
PNEC	-	mg/kg ww	Soil
PNEC	No bio-accumulation potential	mg/l	Oral

Dangerous ingredients with PNEC:

Product information: 10377-60-3 Magnesium nitrate	Value	Unit	Compartment
PNEC	0.45	mg/l	Fresh water
PNEC	0.045	mg/l	Marine water
PNEC	4.5	mg/l	Intermittent releases
PNEC	18	mg/l	STP (sewage treatment plant)
PNEC	-	mg/kg dw	Sediment fresh water
PNEC	-	mg/kg dw	Sediment marine water
PNEC	-	mg/kg ww	Soil
PNEC	No bio-accumulation potential	mg/l	Oral (foodstuffs)

Dangerous ingredients with PNEC:

Product information: 6484-52-2 Ammonium nitrate	Value	Unit	Compartment
PNEC	0.45	mg/l	Fresh water
PNEC	0.045	mg/l	Marine water
PNEC	4.5	mg/l	Intermittent releases
PNEC	18	mg/l	STP (sewage treatment plant)
PNEC	-	mg/kg dw	Sediment fresh water
PNEC	-	mg/kg dw	Sediment marine water
PNEC	-	mg/kg ww	Soil
PNEC	No bio-accumulation potential	mg/l	Oral

Exposure controls

Personal protective equipment:

Remove immediately all contaminated clothing.

Store protective clothing separately.

Avoid contact with the eyes and skin.

General protective and hygienic measures:

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Keep away from food and drink.

Do not eat, drink or smoke while handling this product.

The customary precautionary measures for handling chemicals are to be observed.

Respiratory protection:

If the workplace limit value cannot be achieved with engineering controls, workers should wear a combination filter for short-term exposures (e.g. gas filter for acid inorganic gases/vapours, EN 14387 type E).

Hand protection:



Wear safety gloves.

The glove material (EN374) must be impermeable and resistant to the product / substance / preparation.

When choosing glove material, consider breakthrough times, diffusion rates and degradation.

Glove material

The selection of appropriate gloves does not only depend on the material but also on other quality features, and may vary from manufacturer to manufacturer.

Breakthrough times of the glove material.

The exact breakthrough time of the glove material can be requested from the protective glove manufacturer and must be observed.

Eye protection:



Use close-fitting safety goggles. Eye shower. Full facemask with splash/spatter risk.

Body protection:

Wear suitable protective work clothing (in case of splash risk).

Measurement procedures:

In order to establish compliance with an exposure limit and to establish that exposure is properly controlled, it may be necessary to determine the concentration of the substances in the inhalation zone or in the general workspace.

Environmental exposure controls:

Do not discharge in surface water in concentrated form.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

General information

Appearance

Form:	Liquid.
Colour:	Orange-yellow.
Odour:	Soy-ish.
Odour threshold:	Not determined.

pH-value:	Not determined.
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Change in condition

Melting point/melting range:	Not determined.
Boiling point/boiling range:	Not determined.
Flash point:	> 93 °C.

Flammability (solid, gas):	Not applicable.
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Auto-ignition temperature:	Not determined.
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Explosion hazard:	Not determined.
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Explosive limits

Lower:	Not determined.
Upper:	Not determined.

Vapour pressure:	Not determined.
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Relative density:	1.09 (water = 1).
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Vapour density:	Not determined.
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Evaporation rate:	Not determined.
Solubility in/miscibility with water:	Fully.
Partition coefficient: n-octanol/water:	Not determined.
Viscosity	
Dynamic:	Not determined.
Kinematic:	Not determined.
Other information	No further relevant information available.

SECTION 10: Stability and reactivity

Reactivity

Chemical stability:

The product is stable if stored and handled as prescribed.

Thermal decomposition/Conditions to avoid:

The product is stable if used as prescribed. Avoid storing at high temperatures (> 30 °C) to prevent degradation of the material or pressure build-up. Avoid low temperatures (< 10 °C) to prevent crystallization from occurring. Material is susceptible to frost.

Possibility of hazardous reactions

Contact with strong reducing agents.

Conditions to avoid

Avoid heat, sparks, open flames, and other sources of ignition. Prevent evaporation in a non-ventilated environment. Protect against heat and direct sunlight. Protect against frost.

Incompatible materials

Mildly corrosive to brass. Mildly corrosive to galvanized metal.

Hazardous decomposition products

No hazardous decomposition products are formed if stored under normal conditions. Upon heating or combustion, irritating or toxic fumes such as nitrogen oxides, ammonia, and phosphorus oxides may be released.

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity from the components:

LD/LC50 values relevant for classification:		
Product information: 7757-79-1 Potassium nitrate		
Oral	LD50	> 2000 mg/kg (rat) (OECD 425)
		3750 mg/kg (rat)
		1901 mg/kg (rabbit)
Inhalation	LC50 (4 h)	0.527 mg/l (rat) (OECD 403, inhalable dust)
Dermal	LD50	> 5000 mg/kg (rat) (OECD 402)
Product information: 10377-60-3 Magnesium nitrate		
Oral	LD50	> 5000 mg/kg (rat) (OECD 423)
Inhalation	LC50 (4 h)	-
Dermal	LD50	> 5000 mg/kg (rat) (OECD 402)
Product information: 6484-52-2 Ammonium nitrate		

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Trade name: TERRA VEGA

Oral	LD50	2950 mg/kg (rat) (OECD 401)
Inhalation	LC50 (4 h)	> 88.8 mg/l (rat) (OECD 403)
Dermal	LD50	> 5000 mg/kg (rat) (OECD 402)
Product information: 7664-38-2		Phosphoric acid
Oral	LD50	2000 mg/kg (rat) (OECD 423)
Inhalation	LC50 (1 h)	3846 mg/l (rat) (OECD 403)
Dermal	LD50	2740 mg/kg (rabbit)
Product information: 7697-37-2		Nitric acid
Oral	LD50	430 mg/kg (human)
Inhalation	LC50 (4 h)	> 80 mg/l (rat) (OECD 403)
Dermal	LD50	-

The following health risk assessment is based on an assessment of the various ingredients in the product.

Primary irritant effect:

on the skin:

Irritates the skin and the mucous membranes.

on the eye:

Irritant / corrosive effect.

Germ cell mutagenicity:

Not classified.

Reproductive and developmental toxicity:

Not classified.

Sensitisation:

No sensitising effects known.

CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction):

Not classified.

Other information:

No further relevant information available.

SECTION 12: Ecological information

Toxicology information

Ecotoxicity from the components:

Aquatic toxicity:		
Product information: 7757-79-1		Potassium nitrate
Fish	LC50 (96 h)	> 98.9 mg/l (OECD 203)
Water flea	EC50 (48 h)	180 - 200 mg/l (poecilia reticulata)
Algae	EC50	490 mg/l (daphnia magna)
Bacteria	EC50	-
Product information: 10377-60-3		Magnesium nitrate
Fish	LC50 (96 h)	191 mg/l (95% CI 391-513)
Water flea	EC50 (96 h)	490 mg/l (daphnia magna)
Algae	EC50	-
Bacteria	EC50	-
Product information: 6484-52-2		Ammonium nitrate
Fish	LC50 (48 h)	447 mg/l (95% CI 391-513)
Water flea	EC50	-
Algae	EC50	-
Bacteria	EC50	-
Product information: 7664-38-2		Phosphoric acid

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Fish	LC100 (96 h)	3 - 3.25 mg/l (bluegill sunfish)
Water flea	EC50 (96 h)	> 100 mg/l (daphnia magna)
Algae	EC50	-
Bacteria	EC50	-
Product information: 7697-37-2		Nitric acid
Fish	LC100 (96 h)	3 - 3.5 mg/l (bluegill sunfish)
	LC50 (96 h)	> 100 mg/l
Water flea	EC50 (96 h)	490 mg/l (daphnia magna)
	EC50 (48 h)	180 mg/l (daphnia magna)
Algae	EC50	-
Bacteria	EC50	-

The following ecological risk assessment is based on an assessment of the various ingredients in the product.

Persistence and degradability

Partially inorganic and presumed to be partially biodegradable over the long-term.

Behaviour in environmental compartments**Bioaccumulative potential:**

Bioaccumulation in organisms is not expected.

Mobility in soil:

No further relevant information available.

Further ecological information**General information:**

Water hazard class 1 (German regulation) (Self-assessment): slightly hazardous to water. Do not discharge undiluted product into groundwater, surface water or sewage system.

Results of PBT and vPvB assessment

The mixture does not meet all of the assessment criteria for persistence, bioaccumulation and toxicity and hence is not considered to be PBT or vPvB.

Other adverse effects

Contains substances that contribute to eutrophication: Nitrates.

SECTION 13: Disposal considerations**Waste treatment methods****Recommendation:**

May be brought to a supervised incineration plant in compliance with local regulations.

EC Regulation for Disposal of Waste (EWC):

06 10 02* WASTES FROM INORGANIC CHEMICAL PROCESSES, wastes from the MFSU of nitrogen chemicals, nitrogen chemical processes and fertiliser manufacture; waste containing dangerous substances.

Uncleaned packaging**Recommendation:**

Disposal must be made according to official regulations. Empty the packaging with care. Do not contaminate soil, water or environment with the waste container. Comply with local regulations with regard to the recovery or disposal of waste.

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Trade name: TERRA VEGA

SECTION 14: Transport information**Land transport ADR/RID (cross-border)****ADR/GGVSEB class:** Not a dangerous good according to the transport regulations.**Hazard identification number:** -**UN number:** -**Packing group:** -**Label:** -**Special marking:** -**Proper shipping name from the****UN Model Regulations:** -**Tunnel restriction code:** -**Inland shipping ADN/ADR****ADN/R-class:** -**UN number:** -**Subsidiary risk****Environmental hazards:** -**CMR properties:** -**Buoyancy:** -**Maritime transport IMDG****IMDG-class:** -**UN number:** -**Label:** -**Packing group:** -**EMS number:** -**Marine pollutant:** -**Proper technical name:** -**Air transport ICAO-TI and IATA-DGR****ICAO/IATA-class:** -**UN number:** -**Label:** -**Packing group:** -**Proper technical name:** -**Environmental hazards**

No.

Special precautions for user

None.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

No further relevant information available.

SECTION 15: Regulatory information**Safety, health and environmental regulations/legislation specific for the substance or mixture****National regulations:** -**EU regulations and directives which affect this mixture (not yet directly or indirectly mentioned):**

Directive 89/686/EEC Personal protective equipment.

Directive 98/24/EC Risks related to chemical agents at work.

Regulation 2003/2003/EC Concerning fertilisers.

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Trade name: TERRA VEGA**Chemical safety assessment**

A chemical safety assessment has not been carried out.

SECTION 16: Other information

This information is based on the current state of our knowledge. It should not be construed as any guarantee of product characteristics, nor does it establish a legally valid contractual relationship.

List of relevant R-, H- and EUH-phrases from sections 2 and 3

R8	Contact with combustible material may cause fire.
R34	Causes burns.
R36	Irritating to eyes.
H272	May intensify fire; oxidiser.
H314	Causes severe skin burns and eye damage.
H319	Causes serious eye irritation.

Document history**Printed on:** 4 May 2012.**Previous edition:**

Initial version.

Version: 1.0.**Abbreviations and acronyms:**

ADR:	Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
RID:	Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
IMDG:	International Maritime Code for Dangerous Goods
IATA:	International Air Transport Association
IATA-DGR:	Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
ICAO:	International Civil Aviation Organization
ICAO-TI:	Technical Instructions by the "International Civil Aviation Organization" (ICAO)
P:	Marine Pollutant
GHS:	Globally Harmonized System of Classification and Labelling of Chemicals
CAS:	Chemical Abstracts Service (division of the American Chemical Society)
EC50:	Half maximal effective concentration
LC50:	Lethal concentration, 50 percent
LD50:	Lethal dose, 50 percent
OEL:	Occupational Exposure Limit
NOEC:	No Observed Effect Concentration
vPvB:	Very Persistent and Very Bioaccumulative
PBT:	Persistent, Bioaccumulative and Toxic substance
EWC:	European Waste Catalogue
TWA:	Time-Weighted Average, limit value pertaining to the MAC value
DNEL:	Derived No-Effect Level
DMEL:	Derived Minimal Effect Level
PNEC:	Predicted No-Effect Concentration

Product: CANNA Flores A&B

Statement of Hazardous Nature:
CLASSIFIED AS NON – HAZARDOUS According to Worksafe Australia Criteria

EMERGENCY INFORMATION PHONE NUMBER 1800 683 667

IDENTIFICATION	
Product Name	CANNA Flores A&B.
Other Names	Substra, Classic.
Manufacturers Product Code	None Allocated.
UN Number	No dangerous goods class allocated.
Dangerous Goods Class	Non-Hazardous.
Use	<ul style="list-style-type: none"> Hydroponic industry – plant fertiliser. Agriculture – plant fertiliser.
Poisons Schedule Number	None Allocated.

PHYSICAL DESCRIPTION/ PROPERTIES		
	CANNA Flores A	CANNA Flores B
Appearance	Yellow/ brown liquid with no odour.	Transparent liquid with no odour.
Boiling Point	Not Available.	Not Available.
Vapour Pressure	Not Available.	Not Available.
Specific Gravity	1140 g/l.	1133 g/l.
Flash Point	Not Available.	Not Available.
Flammability Limits	Not Available.	Not Available.
Solubility in Water	100%	100%.

INGREDIENTS
Two component liquid fertiliser NPK 5 + 3 + 10 with trace elements

FIRST AID	
Skin Contact	Wash with plenty of soap and water.
Eye Contact	Flush with water.
Inhaled	None.
Ingestion	Drink copious amounts of water. Seek medical advice.

PRECAUTIONS FOR USE	
Exposure Standard:	The product is not explosive.
Engineerring Controls:	None Available.
Personal Protection:	Good working practice suggests the use of goggles and gloves.
Flammabilty:	Non – Flammable.

SAFE HANDLING INFORMATION	
Storage and Transport	Store in HDPE containers. Ensure that: <ul style="list-style-type: none"> Storage area is above 2°C and below 25°C if possible. Do not expose to direct sunlight. Keep out of reach of children.
Spills and Disposal	Disposal should be in accordance with local, state and Federal legislation.
Fire/ Explosion Risk	This product is not explosive.

Safety Data Sheet



SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

Diesel Fuel No. 1

Product Use: Fuel

Product Number(s): 203409990, 203414990, 203421990, 203422990, 203425, 270093, 270193, 270293, 271005, 271493, 271593, 271693, 272133, 272134

Synonyms: Calco Conv Dyed DF 1, CALCO LS Diesel 1, Calco ULS Conv DF 1, CHEVRON HS Heating Fuel 1, CHEVRON LS Diesel 1, CHEVRON LS Heating Fuel 1, CHEVRON ULSD Diesel 1, CT ULS Conv DF 1, CT ULS Conv Dyed DF 1, ULS Conv DF 1

Company Identification

Chevron Products Company

6001 Bollinger Canyon Rd., T3325/B10

San Ramon, CA 94583

United States of America

Transportation Emergency Response

CHEMTREC: (800) 424-9300 or (703) 527-3887

Health Emergency

Chevron Emergency Information Center: Located in the USA. International collect calls accepted. (800) 231-0623 or (510) 231-0623

Product Information

Product Information: (800) 582-3835

SDS Requests: (800) 414-6737

SPECIAL NOTES: This MSDS covers all Chevron and Calco non-CARB Diesel No. 1 Fuels. The sulfur content is less than 0.5% (mass). (MSDS 7980)

SECTION 2 HAZARDS IDENTIFICATION

CLASSIFICATION: Flammable liquid: Category 3. Aspiration toxicant: Category 1. Skin irritation: Category 2. Target organ toxicant (central nervous system): Category 3. Target organ toxicant (respiratory irritant): Category 3. Acute aquatic toxicant: Category 2. Chronic aquatic toxicant: Category 2.



Signal Word: Danger

Physical Hazards: Flammable liquid and vapor.

Health Hazards: May be fatal if swallowed and enters airways. Causes skin irritation. May cause respiratory irritation. May cause drowsiness or dizziness.

Environmental Hazards: Toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS:

General: Keep out of reach of children. Read label before use.

Prevention: Keep away from heat/sparks/open flames/hot surfaces. -- No smoking. Ground/bond container and receiving equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use explosion-proof electrical/ventilating/lighting/equipment. Avoid breathing dust/fume/gas/mist/vapours/spray. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection. Wash thoroughly after handling. Avoid release to the environment.

Response: IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. IF ON SKIN (or hair): Take off immediately all contaminated clothing and wash it before reuse. Rinse skin with water/shower. IF SWALLOWED: Immediately call a poison center or doctor/physician. Do NOT induce vomiting. Call a poison center or doctor/physician if you feel unwell. In case of fire: Use media specified in the SDS to extinguish. Specific treatment (see Notes to Physician on this label). Collect spillage.

Storage: Store in a well-ventilated place. Keep cool. Keep container tightly closed. Store locked up.

Disposal: Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

HAZARDS NOT OTHERWISE CLASSIFIED: Not Applicable

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
Gas oils	68334-30-5	100 %wt/wt
Kerosine	8008-20-6	0 - 99 %wt/wt
Kerosine, hydrosulfurized	64742-81-0	0 - 99 %wt/wt

Distillates, hydrodesulfurized, middle	64742-80-9	0 - 99 %wt/wt
Distillates, straight run middle (gas oil, light)	64741-44-2	0 - 99 %wt/wt
Naphthalene	91-20-3	0.02 - 0.2 %wt/wt
Total sulfur	Other	0 - 0.04 %wt/wt

SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye: No specific first aid measures are required. As a precaution, remove contact lenses, if worn, and flush eyes with water.

Skin: Wash skin with water immediately and remove contaminated clothing and shoes. Get medical attention if any symptoms develop. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

Ingestion: If swallowed, get immediate medical attention. Do not induce vomiting. Never give anything by mouth to an unconscious person.

Inhalation: Move the exposed person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if breathing difficulties continue or if any other symptoms develop.

Most important symptoms and effects, both acute and delayed

IMMEDIATE HEALTH EFFECTS

Eye: Not expected to cause prolonged or significant eye irritation.

Skin: Contact with the skin causes irritation. Contains a material that causes defatting of the skin. Contact with the skin is not expected to cause an allergic skin response. Symptoms may include pain, itching, discoloration, swelling, and blistering.

Ingestion: Highly toxic; may be fatal if swallowed. Because of its low viscosity, this material can directly enter the lungs, if swallowed, or if subsequently vomited. Once in the lungs it is very difficult to remove and can cause severe injury or death. May be irritating to mouth, throat, and stomach. Symptoms may include pain, nausea, vomiting, and diarrhea.

Inhalation: The vapor or fumes from this material may cause respiratory irritation. Symptoms of respiratory irritation may include coughing and difficulty breathing. Excessive or prolonged breathing of this material may cause central nervous system effects. Central nervous system effects may include headache, dizziness, nausea, vomiting, weakness, loss of coordination, blurred vision, drowsiness, confusion, or disorientation. At extreme exposures, central nervous system effects may include respiratory depression, tremors or convulsions, loss of consciousness, coma or death.

DELAYED OR OTHER HEALTH EFFECTS:

Cancer: Whole diesel engine exhaust has been classified as a Group 2A carcinogen (probably carcinogenic to humans) by the International Agency for Research on Cancer (IARC). Contains naphthalene, which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC). Risk depends on duration and level of exposure. See Section 11 for additional information.

Indication of any immediate medical attention and special treatment needed

Note to Physicians: Ingestion of this product or subsequent vomiting may result in aspiration of light hydrocarbon liquid, which may cause pneumonitis.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

Unusual Fire Hazards: See Section 7 for proper handling and storage.

PROTECTION OF FIRE FIGHTERS:

Fire Fighting Instructions: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective Measures: Eliminate all sources of ignition in the vicinity of the spill or released vapor. If this material is released into the work area, evacuate the area immediately. Monitor area with combustible gas indicator.

Spill Management: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. All equipment used when handling the product must be grounded. A vapor suppressing foam may be used to reduce vapors. Use clean non-sparking tools to collect absorbed material. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.

Reporting: Report spills to local authorities and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required.

SECTION 7 HANDLING AND STORAGE

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

Precautionary Measures: Liquid evaporates and forms vapor (fumes) which can catch fire and burn with explosive force. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Fire hazard is greater as liquid temperature rises above 29C (85F).

Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Do not breathe vapor or fumes. Wash thoroughly after handling. Keep out of the reach of children.

Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this

material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures.

Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

General Storage Information: DO NOT USE OR STORE near heat, sparks, flames, or hot surfaces . USE AND STORE ONLY IN WELL VENTILATED AREA. Keep container closed when not in use.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS:

Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below the recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Eye/Face Protection: No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.

Skin Protection: Wear protective clothing to prevent skin contact. Selection of protective clothing may include gloves, apron, boots, and complete facial protection depending on operations conducted.

Suggested materials for protective gloves include: Nitrile Rubber, Polyurethane, Polyvinyl Alcohol (PVA) (Note: Avoid contact with water. PVA deteriorates in water.), Viton.

Respiratory Protection: Determine if airborne concentrations are below the recommended occupational exposure limits for jurisdiction of use. If airborne concentrations are above the acceptable limits, wear an approved respirator that provides adequate protection from this material, such as: Air-Purifying Respirator for Organic Vapors.

When used as a fuel, this material can produce carbon monoxide in the exhaust. Determine if airborne concentrations are below the occupational exposure limit for carbon monoxide. If not, wear an approved positive-pressure air-supplying respirator.

Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Agency	TWA	STEL	Ceiling	Notation
Gas oils	ACGIH	100 mg/m3	--	--	Skin A3 total hydrocarbon
Gas oils	CVX	--	1000 mg/m3	--	--
Kerosine	ACGIH	200 mg/m3	--	--	Skin A3 Total hydrocarbon vapor
Kerosine	CVX	--	1000 mg/m3	--	--
Kerosine, hydrodesulfurized	ACGIH	200 mg/m3	--	--	Skin A3 Total hydrocarbon vapor
Kerosine, hydrodesulfurized	CVX	--	1000 mg/m3	--	--
Distillates, hydrodesulfurized, middle	Not Applicable	--	--	--	--
Distillates, straight run middle (gas oil, light)	Not Applicable	--	--	--	--
Naphthalene	ACGIH	10 ppm (weight)	15 ppm (weight)	--	Skin
Naphthalene	OSHA Z-1	50 mg/m3	--	--	--
Total sulfur	Not Applicable	--	--	--	--

Consult local authorities for appropriate values.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

Color: Varies depending on specification

Physical State: Liquid

Odor: Hydrocarbon odor

Odor Threshold: No data available

pH: Not Applicable

Vapor Pressure: 0.40 kPa @ 40 °C (104 °F)

Vapor Density (Air = 1): >1

Initial Boiling Point: 204°C (399.2°F) - 300°C (572°F)

Solubility: Soluble in hydrocarbon solvents; insoluble in water.

Freezing Point: Not Applicable

Melting Point: No data available

Specific Gravity: 0.85 @ 15.6°C (60.1°F) (Typical)

Density: No data available
Viscosity: 1.30 - 2.40 cSt @ 40°C (104°F)
Evaporation Rate: No data available
Decomposition temperature: No data available
Octanol/Water Partition Coefficient: No data available

FLAMMABLE PROPERTIES:

Flammability (solid, gas): No Data Available

Flashpoint: 38 °C (100 °F)

Autoignition: 210 °C (410 °F)

Flammability (Explosive) Limits (% by volume in air): Lower: 0.6 Upper: 4.7

SECTION 10 STABILITY AND REACTIVITY

Reactivity: May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Incompatibility With Other Materials: Not applicable

Hazardous Decomposition Products: None known (None expected)

Hazardous Polymerization: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Serious Eye Damage/Irritation: The eye irritation hazard is based on evaluation of data for product components.

Skin Corrosion/Irritation:

Skin Sensitization: This material did not cause skin sensitization reactions in a Buehler guinea pig test.

Acute Dermal Toxicity: ERROR: Symbol QUALFIER_DESC is an unknown variable name. The acute dermal toxicity is based on data for a similar material.

Acute Oral Toxicity: The acute oral toxicity is based on data for a similar material.

Acute Inhalation Toxicity: The acute respiratory toxicity is based on data for a similar material.

Acute Toxicity Estimate: Not Determined

Germ Cell Mutagenicity: The hazard evaluation is based on data for components or a similar material.

Carcinogenicity: Refer to ADDITIONAL TOXICOLOGY INFORMATION below. Whole diesel engine exhaust has been classified as a Group 2A carcinogen (probably carcinogenic to humans) by the International Agency for Research on Cancer (IARC). Contains naphthalene, which has been classified as

a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Reproductive Toxicity: The hazard evaluation is based on data for components or a similar material.

Specific Target Organ Toxicity - Single Exposure: The hazard evaluation is based on data for components or a similar material.

Specific Target Organ Toxicity - Repeated Exposure: The hazard evaluation is based on data for components or a similar material.

ADDITIONAL TOXICOLOGY INFORMATION:

The National Institute of Occupational Safety and Health (NIOSH) has recommended that whole diesel exhaust be regarded as potentially causing cancer. This recommendation was based on test results showing increased lung cancer in laboratory animals exposed to whole diesel exhaust.

This product contains kerosene. CONCAWE (product dossier 94/106) has summarized current health, safety and environmental data available for a number of kerosenes (typically straight-run kerosene, CAS 8008-20-6, or hydrodesulfurized kerosene, CAS 64742-81-0). **ACUTE/SUBCHRONIC:** Following acute exposure to kerosene, signs observed in rats and rabbits were of a low order of toxicity: central nervous system depression occurred following oral exposure, skin irritation (ranging from slight to severe irritation) occurred with dermal exposure, and respiratory tract irritation occurred with inhalation exposure. None of the kerosenes tested produced more than slight eye irritation and none were skin sensitizers. However, intratracheal administration or artificial aspiration of small volumes (0.1 to 0.2 ml) of kerosene into the lungs of rats, chickens and primates resulted in lung damage and/or death. In a study in which rats, mice, rabbits and cats were exposed to kerosene aerosol concentrations in the range 0.05 to 120 mg/l for up to four weeks, reductions in respiratory rate, pulmonary hyperaemia, leucocytosis, monocytosis and decreased erythrocyte sedimentation rate were observed, and histological examination revealed inflammatory changes in the respiratory tract (tracheitis, bronchitis and pneumonia).

CANCER: Chronic (3 to 24 months) mouse dermal toxicity studies of kerosenes and jet fuels produced mild to moderate skin irritation, while long-term (2+ years) studies showed moderate to severe skin damage as well as an increased incidence of tumors after long latency periods (probably due to a secondary mechanism related to skin irritancy). **DEVELOPMENTAL/REPRODUCTION:** Hydrodesulfurized kerosene was tested by the Petroleum Product Stewardship Council in a OECD Guideline 421 Reproductive/Developmental Toxicity Study. The kerosene sample was diluted to 494 (60%), 330 (40%), and 165 (20%) mg/kg/day in food grade mineral oil and applied daily during pre-mating and mating to day 19 of gestation. There was no apparent maternal, reproductive, or developmental toxicity at any dose. Males treated for eight weeks had increased relative kidney weights in the high dose group but no microscopic changes in testes or epididymides. No gross anomalies were observed in the pups.

This product contains naphthalene.

GENERAL TOXICITY: Exposure to naphthalene has been reported to cause methemoglobinemia and/or hemolytic anemia, especially in humans deficient in the enzyme glucose-6-phosphate dehydrogenase. Laboratory animals given repeated oral doses of naphthalene have developed cataracts.

REPRODUCTIVE TOXICITY AND BIRTH DEFECTS: Naphthalene did not cause birth defects when

administered orally to rabbits, rats, and mice during pregnancy, but slightly reduced litter size in mice at dose levels that were lethal to the pregnant females. Naphthalene has been reported to cross the human placenta. GENETIC TOXICITY: Naphthalene caused chromosome aberrations and sister chromatid exchanges in Chinese hamster ovary cells, but was not a mutagen in several other in-vitro tests. CARCINOGENICITY: In a study conducted by the National Toxicology Program (NTP), mice exposed to 10 or 30 ppm of naphthalene by inhalation daily for two years had chronic inflammation of the nose and lungs and increased incidences of metaplasia in those tissues. The incidence of benign lung tumors (alveolar/bronchiolar adenomas) was significantly increased in the high-dose female group but not in the male groups. In another two-year inhalation study conducted by NTP, exposure of rats to 10, 30, and 60 ppm naphthalene caused increases in the incidences of a variety of nonneoplastic lesions in the nose. Increases in nasal tumors were seen in both sexes, including olfactory neuroblastomas in females at 60 ppm and adenomas of the respiratory epithelium in males at all exposure levels. The relevance of these effects to humans has not been established. No carcinogenic effect was reported in a 2-year feeding study in rats receiving naphthalene at 41 mg/kg/day.

This product contains gas oils.

CONCAWE (product dossier 95/107) has summarized current health, safety and environmental data available for a number of gas oils, typically hydrodesulfurized middle distillates, CAS 64742-80-9, straight-run middle distillates, CAS 64741-44-2, and/or light cat-cracked distillate CAS 64741-59-9. CARCINOGENICITY: All materials tested have caused the development of skin tumors in mice, but all featured severe skin irritation and sometimes a long latency period before tumors developed. Straight-run and cracked gas oil samples were studied to determine the influence of dermal irritation on the carcinogenic activity of middle distillates. At non-irritant doses the straight-run gas oil was not carcinogenic, but at irritant doses, weak activity was demonstrated. Cracked gas oils, when diluted with mineral oil, demonstrated carcinogenic activity irrespective of the occurrence of skin irritation. Gas oils were tested on male mice to study tumor initiating/promoting activity. The results demonstrated that while a straight-run gas oil sample was neither an initiator or promotor, a blend of straight-run and FCC stock was both a tumor initiator and a promoter.

GENOTOXICITY: Hydrotreated & hydrodesulfurized gas oils range in activity from inactive to weakly positive in in-vitro bacterial mutagenicity assays. Mouse lymphoma assays on straight-run gas oils without subsequent hydrodesulphurization gave positive results in the presence of S9 metabolic activation. In-vivo bone marrow cytogenetics and sister chromatic exchange assay exhibited no activity for straight-run components with or without hydrodesulphurization. Thermally or catalytically cracked gas oils tested with in-vitro bacterial mutagenicity assays in the presence of S9 metabolic activation were shown to be mutagenic. In-vitro sister chromatic exchange assays on cracked gas oil gave equivocal results both with and without S9 metabolic activation. In-vivo bone marrow cytogenetics assay was inactive for two cracked gas oil samples. Three hydrocracked gas oils were tested with in-vitro bacterial mutagenicity assays with S9, and one of the three gave positive results. Twelve distillate fuel samples were tested with in-vitro bacterial mutagenicity assays & with S9 metabolic activation and showed negative to weakly positive results. In one series, activity was shown to be related to the PCA content of samples tested. Two in-vivo studies were also conducted. A mouse dominant lethal assay was negative for a sample of diesel fuel. In the other study, 9 samples of No 2 heating oil containing 50% cracked stocks caused a slight increase in the number of chromosomal aberrations in bone marrow cytogenetics assays. DEVELOPMENTAL TOXICITY: Diesel fuel vapor did not cause fetotoxic or teratogenic effects when pregnant rats were exposed on days 6-15 of pregnancy. Gas oils were applied to the skin of pregnant rats daily on days 0-19

of gestation. All but one (coker light gas oil) caused fetotoxicity (increased resorptions, reduced litter weight, reduced litter size) at dose levels that were also maternally toxic.

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY

This material is expected to be toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment. A series of studies on the acute toxicity of 4 diesel fuel samples were conducted by one laboratory using water accommodated fractions. The range of effective (EC50) or lethal concentrations (LC50) expressed as loading rates were:

48 hour(s) LC50: 20 - 210 mg/l (*Daphnia magna*)
96 hour(s) LC50: 21 - 210 mg/l (*Salmo gairdneri*)
72 hour(s) EC50: 2.6 - 25 mg/l (*Selenastrum capricornutum*)

MOBILITY

No data available.

PERSISTENCE AND DEGRADABILITY

This material is not expected to be readily biodegradable. On release to the environment the lighter components of diesel fuel will generally evaporate but depending on local environmental conditions (temperature, wind, mixing or wave action, soil type, etc.) the remainder may become dispersed in the water column or absorbed to soil or sediment. Diesel fuel would not be expected to be readily biodegradable. In a modified Strum test (OECD method 301B) approximately 40% biodegradation was recorded over 28 days. However, it has been shown that most hydrocarbon components of diesel fuel are degraded in soil in the presence of oxygen. Under anaerobic conditions, such as in anoxic sediments, rates of biodegradation are negligible. The biodegradability of this material is based on an evaluation of data for the components or a similar material.

The product has not been tested. The statement has been derived from products of a similar structure and composition.

POTENTIAL TO BIOACCUMULATE

Bioconcentration Factor: No data available.

Octanol/Water Partition Coefficient: No data available

SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by international, country, or local laws and regulations.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT Shipping Description: UN1202, GAS OIL, 3, III OR UN1223, KEROSENE, 3, III ; OPTIONAL DISCLOSURES AS COMBUSTIBLE LIQUID PER 49 CFR 173.150 (F) OR AS A MARINE POLLUTANT (PETROLEUM DISTILLATES, KEROSENE, GAS OIL)

IMO/IMDG Shipping Description: UN1268, PETROLEUM DISTILLATES, N.O.S. (KEROSENE, GASOIL), 3, III, FLASH POINT SEE SECTION 5 OR 9, MARINE POLLUTANT (KEROSENE, GASOIL)

ICAO/IATA Shipping Description: UN1202, GAS OIL, 3, III; OR UN1223, KEROSENE, 3, III; OR UN1268, PETROLEUM DISTILLATES, N.O.S., 3, III

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code:
Not applicable

SECTION 15 REGULATORY INFORMATION

EPCRA 311/312 CATEGORIES:	1. Immediate (Acute) Health Effects:	YES
	2. Delayed (Chronic) Health Effects:	NO
	3. Fire Hazard:	YES
	4. Sudden Release of Pressure Hazard:	NO
	5. Reactivity Hazard:	NO

REGULATORY LISTS SEARCHED:

01-1=IARC Group 1	03=EPCRA 313
01-2A=IARC Group 2A	04=CA Proposition 65
01-2B=IARC Group 2B	05=MA RTK
02=NTP Carcinogen	06=NJ RTK
	07=PA RTK

The following components of this material are found on the regulatory lists indicated.

Kerosine, hydrodesulfurized	05, 06, 07
Gas oils	07
Kerosine	05, 06, 07
Distillates, straight run middle (gas oil, light)	06
Naphthalene	01-2B, 02, 03, 04, 05, 06, 07

CERCLA REPORTABLE QUANTITIES(RQ)/EPCRA 302 THRESHOLD PLANNING QUANTITIES(TPQ):

Component	Component RQ	Component TPQ	Product RQ
Naphthalene	100 lbs	None	55556 lbs

CHEMICAL INVENTORIES:

All components comply with the following chemical inventory requirements: AICS (Australia), DSL (Canada), EINECS (European Union), IECSC (China), KECI (Korea), PICCS (Philippines), TSCA (United States).

NEW JERSEY RTK CLASSIFICATION:

Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows: DIESEL FUEL

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 1 Flammability: 2 Reactivity: 0

HMIS RATINGS: Health: 2 Flammability: 2 Reactivity: 0

(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT: This revision updates the following sections of this Safety Data Sheet: 1,16
Revision Date: DECEMBER 02, 2015

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit
GHS - Globally Harmonized System	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Governmental Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	SDS - Safety Data Sheet
HMIS - Hazardous Materials Information System	NFPA - National Fire Protection Association (USA)
DOT - Department of Transportation (USA)	NTP - National Toxicology Program (USA)
IARC - International Agency for Research on Cancer	OSHA - Occupational Safety and Health Administration
NCEL - New Chemical Exposure Limit	EPA - Environmental Protection Agency
SCBA - Self-Contained Breathing Apparatus	

Prepared according to the 29 CFR 1910.1200 (2012) by Chevron Energy Technology Company, 6001

Bollinger Canyon Road San Ramon, CA 94583.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use.

This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Safety Data Sheet



SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

CHEVRON and TEXACO MID-GRADE UNLEADED GASOLINES

Product Use: Fuel

Product Number(s): 201001, 204041, 204044, 204063, 204096, 204278, 204312, 204313, 204753 [See Section 16 for Additional Product Numbers]

Synonyms: Calco Mid-Grade Unleaded Gasoline; Chevron Mid-Grade Unleaded Gasoline; Chevron Plus Unleaded Gasoline; Texaco Power Plus Gasoline

Company Identification

Chevron Products Company
6001 Bollinger Canyon Rd.
San Ramon, CA 94583
United States of America

Transportation Emergency Response

CHEMTREC: (800) 424-9300 or (703) 527-3887

Health Emergency

Chevron Emergency Information Center: Located in the USA. International collect calls accepted. (800) 231-0623 or (510) 231-0623

Product Information

Product Information: (800) 582-3835
SDS Requests: lubemsds@chevron.com

SECTION 2 HAZARDS IDENTIFICATION

CLASSIFICATION: Flammable liquid: Category 1. Aspiration toxicant: Category 1. Carcinogen: Category 1A. Target organ toxicant (repeated exposure): Category 1. Eye irritation: Category 2A. Germ Cell Mutagen: Category 1B. Skin irritation: Category 2. Reproductive toxicant (developmental): Category 2. Target organ toxicant (central nervous system): Category 3. Acute aquatic toxicant: Category 2. Chronic aquatic toxicant: Category 2.



Signal Word: Danger

Physical Hazards: Extremely flammable liquid and vapor.

Health Hazards: May be fatal if swallowed and enters airways. May cause genetic defects. May cause cancer.

Causes skin irritation. Causes serious eye irritation. Suspected of damaging the unborn child. May cause drowsiness or dizziness.

Target Organs: Causes damage to organs (Blood/Blood Forming Organs) through prolonged or repeated exposure.

Environmental Hazards: Toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS:

General: Keep out of reach of children. Read label before use.

Prevention: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. -- No smoking. Ground/bond container and receiving equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use explosion-proof electrical/ventilating/lighting/equipment. Do not breathe dust/fume/gas/mist/vapours/spray. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection. Use personal protective equipment as required. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Avoid release to the environment.

Response: In case of fire: Use media specified in the SDS to extinguish. IF exposed or concerned: Get medical advice/attention. IF INHALED: Call a poison center or doctor/physician if you feel unwell. Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. IF ON SKIN (or hair): Take off immediately all contaminated clothing and wash it before reuse. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Do NOT induce vomiting. Specific treatment (see Notes to Physician on this label). Collect spillage.

Storage: Store in a well-ventilated place. Keep cool. Keep container tightly closed. Store locked up.

Disposal: Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

HAZARDS NOT OTHERWISE CLASSIFIED: Not Applicable

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS

Hazardous Substance(s) or Complex Substance(s) required for disclosure

COMPONENTS	CAS NUMBER	AMOUNT
Gasoline	86290-81-5	100 %volume

Hazardous Constituent(s) Contained in Complex Substance(s) required for disclosure

COMPONENTS	CAS NUMBER	AMOUNT
Toluene	108-88-3	1 - 35 %volume
Xylene	1330-20-7	1 - 15 %volume
Pentane isomers (pentanes)	MIXTURE	1 - 13 %volume
Butane	106-97-8	1 - 12 %volume
Ethanol	64-17-5	0 - 10 %volume
Hexane	110-54-3	1 - 5 %volume
Benzene	71-43-2	0.1 - 5 %volume
Heptane	142-82-5	1 - 4 %volume
Ethylbenzene	100-41-4	0.1 - 3 %volume
Cyclohexane	110-82-7	1 - 3 %volume
Methylcyclohexane	108-87-2	1 - 2 %volume
Naphthalene	91-20-3	0.1 - 2 %volume

Motor gasoline is considered a mixture by EPA under the Toxic Substances Control Act (TSCA). The refinery

streams used to blend motor gasoline are all on the TSCA Chemical Substances Inventory. The appropriate CAS number for refinery blended motor gasoline is 86290-81-5. The product specifications of motor gasoline sold in your area will depend on applicable Federal and State regulations.

SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye: Flush eyes with water immediately while holding the eyelids open. Remove contact lenses, if worn, after initial flushing, and continue flushing for at least 15 minutes. Get immediate medical attention.

Skin: Wash skin with water immediately and remove contaminated clothing and shoes. Get medical attention if any symptoms develop. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

Ingestion: If swallowed, get immediate medical attention. Do not induce vomiting. Never give anything by mouth to an unconscious person.

Inhalation: Move the exposed person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if breathing difficulties continue or if any other symptoms develop.

Most important symptoms and effects, both acute and delayed

IMMEDIATE HEALTH EFFECTS

Eye: Contact with the eyes causes severe irritation. Symptoms may include pain, tearing, reddening, swelling and impaired vision.

Skin: Contact with the skin causes irritation. Skin contact may cause drying or defatting of the skin. Symptoms may include pain, itching, discoloration, swelling, and blistering. Contact with the skin is not expected to cause an allergic skin response.

Ingestion: Highly toxic; may be fatal if swallowed. Because of its low viscosity, this material can directly enter the lungs, if swallowed, or if subsequently vomited. Once in the lungs it is very difficult to remove and can cause severe injury or death. May be irritating to mouth, throat, and stomach. Symptoms may include pain, nausea, vomiting, and diarrhea.

Inhalation: Excessive or prolonged breathing of this material may cause central nervous system effects. Central nervous system effects may include headache, dizziness, nausea, vomiting, weakness, loss of coordination, blurred vision, drowsiness, confusion, or disorientation. At extreme exposures, central nervous system effects may include respiratory depression, tremors or convulsions, loss of consciousness, coma or death.

DELAYED OR OTHER HEALTH EFFECTS:

Reproduction and Birth Defects: Contains material that may cause harm to the unborn child if inhaled above the recommended exposure limit.

Cancer: Prolonged or repeated exposure to this material may cause cancer. Gasoline has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Whole gasoline exhaust has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Contains benzene, which has been classified as a carcinogen by the National Toxicology Program (NTP) and a Group 1 carcinogen (carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Contains naphthalene, which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC). Contains ethylbenzene which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Genetic Toxicity: Contains material that may cause heritable genetic damage based on animal data.

Target Organs: Contains material that may cause damage to the following organ(s) following repeated inhalation at concentrations above the recommended exposure limit: Blood/Blood Forming Organs See Section 11 for additional information. Risk depends on duration and level of exposure.

Indication of any immediate medical attention and special treatment needed

Note to Physicians: Ingestion of this product or subsequent vomiting may result in aspiration of light hydrocarbon liquid, which may cause pneumonitis.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Dry Chemical, CO₂, Aqueous Film Forming Foam (AFFF) or alcohol resistant foam.

Unusual Fire Hazards: See Section 7 for proper handling and storage.

PROTECTION OF FIRE FIGHTERS:

Fire Fighting Instructions: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective Measures: Eliminate all sources of ignition in the vicinity of the spill or released vapor. If this material is released into the work area, evacuate the area immediately. Monitor area with combustible gas indicator.

Spill Management: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. All equipment used when handling the product must be grounded. A vapor suppressing foam may be used to reduce vapors. Use clean non-sparking tools to collect absorbed material. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.

Reporting: Report spills to local authorities and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required.

SECTION 7 HANDLING AND STORAGE

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

Precautionary Measures: This product presents an extreme fire hazard. Liquid very quickly evaporates, even at low temperatures, and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Never siphon gasoline by mouth.

Do not store in open or unlabeled containers. READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL. Use only as a motor fuel. Do not use for cleaning, pressure appliance fuel, or any other such use. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Do not breathe vapor or fumes. Wash thoroughly after handling. Keep out of the reach of children.

Static Hazard: Improper filling of portable gasoline containers creates danger of fire. Only dispense gasoline into approved and properly labeled gasoline containers. Always place portable containers on the ground. Be sure pump nozzle is in contact with the container while filling. Do not use a nozzle's lock-open device. Do not fill portable containers that are inside a vehicle or truck/trailer bed.

Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures.

Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

General Storage Information: DO NOT USE OR STORE near heat, sparks, flames, or hot surfaces. USE AND STORE ONLY IN WELL VENTILATED AREA. Keep container closed when not in use.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS:

Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below the recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Eye/Face Protection: Wear protective equipment to prevent eye contact. Selection of protective equipment may include safety glasses, chemical goggles, face shields, or a combination depending on the work operations conducted.

Skin Protection: Wear protective clothing to prevent skin contact. Selection of protective clothing may include gloves, apron, boots, and complete facial protection depending on operations conducted. Suggested materials for protective gloves include: Chlorinated Polyethylene (or Chlorosulfonated Polyethylene), Nitrile Rubber, Polyurethane, Viton.

Respiratory Protection: Determine if airborne concentrations are below the recommended occupational exposure limits for jurisdiction of use. If airborne concentrations are above the acceptable limits, wear an approved respirator that provides adequate protection from this material, such as: Air-Purifying Respirator for Organic Vapors.

When used as a fuel, this material can produce carbon monoxide in the exhaust. Determine if airborne concentrations are below the occupational exposure limit for carbon monoxide. If not, wear an approved positive-pressure air-supplying respirator.

Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Agency	TWA	STEL	Ceiling	Notation
Gasoline	ACGIH	300 ppm (weight)	500 ppm (weight)	--	A3
Toluene	ACGIH	20 ppm (weight)	--	--	--

Toluene	OSHA Z-2	200 ppm (weight)	--	300 ppm (weight)	--
Xylene	ACGIH	100 ppm (weight)	150 ppm (weight)	--	--
Xylene	OSHA Z-1	435 mg/m3	--	--	--
Pentane isomers (pentanes)	Not Applicable	--	--	--	--
Butane	ACGIH	--	1000 ppm (weight)	--	--
Ethanol	ACGIH	1000 ppm (weight)	--	--	A4 A3
Ethanol	OSHA Z-1	1900 mg/m3	--	--	--
Benzene	ACGIH	.5 ppm (weight)	2.5 ppm (weight)	--	Skin A1 Skin
Hexane	ACGIH	50 ppm (weight)	--	--	Skin
Benzene	CVX	1 ppm (weight)	5 ppm (weight)	--	--
Benzene	OSHA SRS	1 ppm (weight)	5 ppm (weight)	--	--
Hexane	OSHA Z-1	1800 mg/m3	--	--	--
Benzene	OSHA Z-2	10 ppm (weight)	--	25 ppm (weight)	--
Heptane	ACGIH	400 ppm (weight)	500 ppm (weight)	--	--
Heptane	OSHA Z-1	2000 mg/m3	--	--	--
Cyclohexane	ACGIH	100 ppm (weight)	--	--	--
Ethylbenzene	ACGIH	20 ppm (weight)	--	--	A3
Ethylbenzene	OSHA Z-1	435 mg/m3	--	--	--
Cyclohexane	OSHA Z-1	1050 mg/m3	--	--	--
Methylcyclohexane	ACGIH	400 ppm (weight)	--	--	--
Naphthalene	ACGIH	10 ppm (weight)	15 ppm	--	Skin A3
Naphthalene	OSHA Z-1	50 mg/m3	--	--	--
Methylcyclohexane	OSHA Z-1	2000 mg/m3	--	--	--

Consult local authorities for appropriate values.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

Color: Colorless to yellow

Physical State: Liquid

Odor: Petroleum odor

Odor Threshold: No data available

pH: Not Applicable

Vapor Pressure: 5 psi - 15.50 psi (Typical) @ 37.8 °C (100 °F)

Vapor Density (Air = 1): 3 - 4 (Typical)

Initial Boiling Point: 27.2°C (81°F) - 52.8°C (127°F) (Typical)

Solubility: Negligible

Freezing Point: Not Applicable

Melting Point: Not Applicable

Specific Gravity: 0.70 g/ml - 0.80 g/ml @ 15.6°C (60.1°F) (Typical)

Viscosity: <1 SUS @ 37.8°C (100°F)

Evaporation Rate: No data available

Decomposition temperature: No data available

Octanol/Water Partition Coefficient: 2 - 7

FLAMMABLE PROPERTIES:

Flammability (solid, gas): No Data Available

Flashpoint: (Tagliabue Closed Cup ASTM D56) < -45 °C (< -49 °F)

Autoignition: > 280 °C (> 536 °F)

Flammability (Explosive) Limits (% by volume in air): Lower: 1.4 Upper: 7.6

SECTION 10 STABILITY AND REACTIVITY
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Reactivity: May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Incompatibility With Other Materials: Not applicable

Hazardous Decomposition Products: None known (None expected)

Hazardous Polymerization: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Serious Eye Damage/Irritation: The eye irritation hazard is based on evaluation of data for product components.

Skin Corrosion/Irritation: For a 4-hour exposure, the Primary Irritation Index (PII) in rabbits is: 4.8/8.0.

Skin Sensitization: This material did not cause skin sensitization reactions in a Buehler guinea pig test.

Acute Dermal Toxicity: LD50: >3.75 g/kg (rabbit).

Acute Oral Toxicity: LD50: >5 ml/kg (rat).

Acute Inhalation Toxicity: 4 hour(s) LD50: >20000 mg/m3 (rat).

Acute Toxicity Estimate: Not Determined

Germ Cell Mutagenicity: The hazard evaluation is based on data for components or a similar material.

Carcinogenicity: The hazard evaluation is based on data for components or a similar material. Gasoline has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Whole gasoline exhaust has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Contains benzene, which has been classified as a carcinogen by the National Toxicology Program (NTP) and a Group 1 carcinogen (carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Contains naphthalene, which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC). Contains ethylbenzene which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Reproductive Toxicity: The hazard evaluation is based on data for components or a similar material.

Specific Target Organ Toxicity - Single Exposure: The hazard evaluation is based on data for components or a similar material.

Specific Target Organ Toxicity - Repeated Exposure: The hazard evaluation is based on data for components or a similar material.

ADDITIONAL TOXICOLOGY INFORMATION:

Gasolines are highly volatile and can produce significant concentrations of vapor at ambient temperatures. Gasoline vapor is heavier than air and at high concentrations may accumulate in confined spaces to present both safety and health hazards. When vapor exposures are low, or short duration and infrequent, such as during refueling and tanker loading/unloading, neither total hydrocarbon nor components such as benzene are likely to result in any adverse health effects. In situations such as accidents or spills where exposure to gasoline vapor is potentially high, attention should be paid to potential toxic effects of specific components. Information about specific components in gasoline can be found in Sections 2/3, 8 and 15 of this MSDS. More detailed information on the health hazards of specific gasoline components can be obtained calling the Chevron Emergency Information Center (see Section 1 for phone numbers).

Pathological misuse of solvents and gasoline, involving repeated and prolonged exposure to high concentrations of vapor is a significant exposure on which there are many reports in the medical literature. As with other solvents, persistent abuse involving repeated and prolonged exposures to high concentrations of vapor has been reported to result in central nervous system damage and eventually, death. In a study in which ten human volunteers were exposed for 30 minutes to approximately 200, 500 or 1000 ppm concentrations of gasoline vapor, irritation of the eyes was the only significant effect observed, based on both subjective and objective assessments.

Lifetime inhalation of wholly vaporized unleaded gasoline at 2056 ppm has caused increased liver tumors in female mice and kidney cancer in male rats. In their 1988 review of carcinogenic risk from gasoline, The International Agency for Research on Cancer (IARC) noted that, because published epidemiology studies did not include any exposure data, only occupations where gasoline exposure may have occurred were reviewed. These included gasoline service station attendants and automobile mechanics. IARC also noted that there was no opportunity to separate effects of combustion products from those of gasoline itself. Although IARC allocated gasoline a final overall classification of Group 2B, i.e. possibly carcinogenic to humans, this was based on limited evidence in experimental animals plus supporting evidence including the presence in gasoline of benzene. The actual evidence for carcinogenicity in humans was considered inadequate.

MUTAGENICITY: Gasoline was not mutagenic, with or without activation, in the Ames assay (Salmonella typhimurium), Saccharomyces cerevisiae, or mouse lymphoma assays. In addition, point mutations were not induced in human lymphocytes. Gasoline was not mutagenic when tested in the mouse dominant lethal assay. Administration of gasoline to rats did not cause chromosomal aberrations in their bone marrow cells.

EPIDEMIOLOGY: To explore the health effects of workers potentially exposed to gasoline vapors in the marketing and distribution sectors of the petroleum industry, the American Petroleum Institute sponsored a cohort mortality study (Publication 4555), a nested case-control study (Publication 4551), and an exposure assessment study (Publication 4552). Histories of exposure to gasoline were reconstructed for cohort of more than 18,000 employees from four companies for the time period between 1946 and 1985. The results of the cohort mortality study indicated that there was no increased mortality from either kidney cancer or leukemia among marketing and marine distribution employees who were exposed to gasoline in the petroleum industry, when compared to the general population. More importantly, based on internal comparisons, there was no association between mortality from kidney cancer or leukemia and various indices of gasoline exposure. In particular, neither duration of employment, duration of exposure, age at first exposure, year of first exposure, job category, cumulative exposure, frequency of peak exposure, nor average intensity of exposure had any effect on kidney cancer or leukemia mortality. The results of the nested case-control study confirmed the findings of the original cohort study. That is, exposure to gasoline at the levels experienced by this cohort of distribution workers is not a significant risk factor for leukemia (all cell types), acute myeloid leukemia, kidney cancer or multiple myeloma.

This product contains ethylbenzene.

BIRTH DEFECTS AND REPRODUCTION: Ethylbenzene is not expected to cause birth defects or other developmental effects based on well-conducted studies in rabbits and rats sponsored by NIOSH. Other studies in rats and mice which reported urinary tract malformations have many deficiencies and have limited usefulness in evaluating human risk. Reproductive effects are not expected based on a NIOSH study of fertility, and lack of effects observed for sperm counts and motility, estrous cycle and pathology of reproductive organs following repeated exposures. **HEARING:** Statistically significant losses in outer hair cells (OHCs) were observed in rats

exposed to ≥ 200 ppm ethylbenzene, 6 hours/day, 6 days/week for 13 weeks, after an 8-week recovery period. Following longer exposure, inner hair cells losses were also observed in rats exposed to ≥ 600 ppm ethylbenzene, but only occasionally in rats exposed to 400 ppm. The Lowest Observed Adverse Effect Level in rats (LOAEL) was 200 ppm for losses of OHCs. Guinea pigs exposed to ethylbenzene at 2,500 ppm, 6 hours/day for 5 days did not show auditory deficits or losses in OHCs. The concentration of ethylbenzene used in the JP-8 study was approximately 10 ppm. GENETIC TOXICITY: Ethylbenzene tested negative in the bacterial mutation test, Chinese Hamster Ovary (CHO) cell in vitro assay, sister chromatid exchange assay and an unscheduled DNA synthesis assay. Conflicting results have been reported for the mouse lymphoma cell assay. Increased micronuclei were reported in an in vitro Syrian hamster embryo cell assay; however, two in vivo micronuclei studies in mice were negative. In Syrian hamster embryo cells in vitro, cell transformation was observed at 7 days of incubation but not at 24 hours. Based on these results, ethylbenzene is not expected to be mutagenic or clastogenic. CARCINOGENICITY: In studies conducted by the National Toxicology Program, rats and mice were exposed to ethylbenzene at 25, 250 and 750 ppm for six hours per day, five days per week for 103 weeks. In rats exposed to 750 ppm, the incidence of kidney tubule hyperplasia and tumors was increased. Testicular tumors develop spontaneously in nearly all rats if allowed to complete their natural life span; in this study, the development of these tumors appeared to be enhanced in male rats exposed to 750 ppm. In mice, the incidences of lung tumors in males and liver tumors in females exposed to 750 ppm were increased as compared to control mice but were within the range of incidences observed historically in control mice. Other liver effects were observed in male mice exposed to 250 and 750 ppm. The incidences of hyperplasia were increased in the pituitary gland in female mice at 250 and 750 ppm and in the thyroid in male and female mice at 750 ppm.

This product contains toluene.

GENERAL TOXICITY: The primary effects of exposure to toluene in animals and humans are on the central nervous system. Solvent abusers, who typically inhale high concentrations (thousands of ppm) for brief periods of time, in addition to experiencing respiratory tract irritation, often suffer permanent central nervous system effects that include tremors, staggered gait, impaired speech, hearing and vision loss, and changes in brain tissue. Death in some solvent abusers has been attributed to cardiac arrhythmias, which appear to have been triggered by epinephrine acting on solvent sensitized cardiac tissue. Although liver and kidney effects have been seen in some solvent abusers, results of animal testing with toluene do not support these as primary target organs.

HEARING: Humans who were occupationally exposed to concentrations of toluene as low as 100 ppm for long periods of time have experienced hearing deficits. Hearing loss, as demonstrated using behavioral and electrophysiological testing as well as by observation of structural damage to cochlear hair cells, occurred in experimental animals exposed to toluene. It also appears that toluene exposure and noise may interact to produce hearing deficits.

COLOR VISION: In a single study of workers exposed to toluene at levels under 50 ppm, small decreases in the ability to discriminate colors in the blue-yellow range have been reported for female workers. This effect, which should be investigated further, is very subtle and would not likely have been noticed by the people tested.

REPRODUCTIVE/DEVELOPMENTAL TOXICITY: Toluene may also cause mental and/or growth retardation in the children of female solvent abusers who directly inhale toluene (usually at thousands of ppm) when they are pregnant. Toluene caused growth retardation in rats and rabbits when administered at doses that were toxic to the mothers. In rats, concentrations of up to 5000 ppm did not cause birth defects. No effects were observed in the offspring at doses that did not intoxicate the pregnant animals. The exposure level at which no effects were seen (No Observed Effect Level, NOEL) is 750 ppm in the rat and 500 ppm in the rabbit.

This product contains xylene.

ACUTE TOXICITY: The primary effects of exposure to xylene in animals and humans are on the central nervous system. In addition, in some individuals, xylene exposure can sensitize cardiac tissue to epinephrine which may precipitate fatal ventricular fibrillation. DEVELOPMENTAL TOXICITY: Xylene has been reported to cause developmental toxicity in rats and mice exposed by inhalation during pregnancy. The effects noted consisted of delayed development and minor skeletal variations. In addition, when pregnant mice were exposed by ingestion to a level that killed nearly one-third of the test group, lethality (resorptions) and malformations (primarily cleft palate) occurred. Since xylene can cross the placenta, it may be appropriate to prevent exposure during pregnancy. GENETIC TOXICITY/CARCINOGENICITY: Xylene was not genotoxic in several mutagenicity testing assays including the Ames test. In a cancer study sponsored by the National Toxicology Program (NTP), technical grade

xylene gave no evidence of carcinogenicity in rats or mice dosed daily for two years. HEARING: Mixed xylenes have been shown to cause measurable hearing loss in rats exposed to 800 ppm in the air for 14 hours per day for six weeks. Exposure to 1450 ppm xylene for 8 hours caused hearing loss while exposure to 1700 ppm for 4 hours did not. Although no information is available for lower concentrations, other chemicals that cause hearing loss in rats at relatively high concentrations do not cause hearing loss in rats at low concentrations. Worker exposure to xylenes at the permissible exposure limit (100 ppm, time-weighted average) is not expected to cause hearing loss.

This product contains naphthalene.

GENERAL TOXICITY: Exposure to naphthalene has been reported to cause methemoglobinemia and/or hemolytic anemia, especially in humans deficient in the enzyme glucose-6-phosphate dehydrogenase. Laboratory animals given repeated oral doses of naphthalene have developed cataracts. REPRODUCTIVE TOXICITY AND BIRTH DEFECTS: Naphthalene did not cause birth defects when administered orally to rabbits, rats, and mice during pregnancy, but slightly reduced litter size in mice at dose levels that were lethal to the pregnant females. Naphthalene has been reported to cross the human placenta. GENETIC TOXICITY: Naphthalene caused chromosome aberrations and sister chromatid exchanges in Chinese hamster ovary cells, but was not a mutagen in several other in-vitro tests. CARCINOGENICITY: In a study conducted by the National Toxicology Program (NTP), mice exposed to 10 or 30 ppm of naphthalene by inhalation daily for two years had chronic inflammation of the nose and lungs and increased incidences of metaplasia in those tissues. The incidence of benign lung tumors (alveolar/bronchiolar adenomas) was significantly increased in the high-dose female group but not in the male groups. In another two-year inhalation study conducted by NTP, exposure of rats to 10, 30, and 60 ppm naphthalene caused increases in the incidences of a variety of nonneoplastic lesions in the nose. Increases in nasal tumors were seen in both sexes, including olfactory neuroblastomas in females at 60 ppm and adenomas of the respiratory epithelium in males at all exposure levels. The relevance of these effects to humans has not been established. No carcinogenic effect was reported in a 2-year feeding study in rats receiving naphthalene at 41 mg/kg/day.

This product contains cyclohexane.

Cyclohexane primarily affects the central nervous systems of laboratory animals and humans. Acute or prolonged inhalation of cyclohexane at levels below the recommended exposure limits does not result in toxic effects while acute exposures to levels above these recommended limits can cause reversible central nervous system depression. Prolonged exposures of laboratory animals to high levels (up to low thousands of parts per million) have also caused reversible effects which included hyperactivity, diminished response to stimuli, and adaptive liver changes while very high levels (high thousands of parts per million) were fatal. No developmental effects were seen in rats or rabbits following exposures of up to 7000 ppm cyclohexane. No reproductive effects occurred in rats, although postnatal pup growth was reduced at 7000 ppm in a similar manner as observed in the parental animals. Cyclohexane has not been shown to be mutagenic in several in vitro and in vivo assays and has not produced tumors in several dermal application long-term bioassays. Based on these results and the lack of any mutagenic or genotoxic metabolites, cyclohexane is not expected to be mutagenic or genotoxic. Following dermal exposure, cyclohexane is rapidly absorbed, metabolized, and excreted.

This product contains ethanol (ethyl alcohol).

Chronic ingestion of ethanol can damage the liver, nervous system and heart. Chronic heavy consumption of alcoholic beverages has been associated with an increased risk of cancer. Ingestion of ethanol during pregnancy can cause human birth defects such as fetal alcohol syndrome.

This product contains butane.

An atmospheric concentration of 100,000 ppm (10%) butane is not noticeably irritating to the eyes, nose or respiratory tract, but will produce slight dizziness in a few minutes of exposure. No chronic systemic effect has been reported from occupational exposure.

This product contains benzene.

GENETIC TOXICITY/CANCER: Repeated or prolonged breathing of benzene vapor has been associated with the development of chromosomal damage in experimental animals and various blood diseases in humans ranging from aplastic anemia to leukemia (a form of cancer). All of these diseases can be fatal. In some individuals, benzene exposure can sensitize cardiac tissue to epinephrine which may precipitate fatal ventricular fibrillation. REPRODUCTIVE/DEVELOPMENTAL TOXICITY: No birth defects have been shown to occur in pregnant

laboratory animals exposed to doses not toxic to the mother. However, some evidence of fetal toxicity such as delayed physical development has been seen at such levels. The available information on the effects of benzene on human pregnancies is inadequate but it has been established that benzene can cross the human placenta.

OCCUPATIONAL: The OSHA Benzene Standard (29 CFR 1910.1028) contains detailed requirements for training, exposure monitoring, respiratory protection and medical surveillance triggered by the exposure level. Refer to the OSHA Standard before using this product.

This product contains n-hexane.

TARGET ORGAN TOXICITY: Prolonged or repeated ingestion, skin contact or breathing of vapors of n-hexane has been shown to cause peripheral neuropathy. Recovery ranges from no recovery to complete recovery depending upon the severity of the nerve damage. Exposure to 1000 ppm n-hexane for 18 hr/day for 61 days has been shown to cause testicular damage in rats. However, when rats were exposed to higher concentrations for shorter daily periods (10,000 ppm for 6 h/day, 5 days/wk for 13 weeks), no testicular lesions were seen.

CARCINOGENICITY: Chronic exposure to commercial hexane (52% n-hexane) at a concentration of 9000ppm was not carcinogenic to rats or to male mice, but did result in an increased incidence of liver tumors in female mice. No carcinogenic effects were observed in female mice exposed to 900 or 3000 ppm hexane or in male mice. The relevance for humans of these hexane-induced mouse liver tumors is questionable.

GENETIC TOXICITY: n-Hexane caused chromosome aberrations in bone marrow of rats, but was negative in the AMES and mouse lymphoma tests.

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY

Gasoline studies have been conducted in the laboratory under a variety of test conditions with a range of fish and invertebrate species. An even more extensive database is available on the aquatic toxicity of individual aromatic constituents. The majority of published studies do not identify the type of gasoline evaluated, or even provide distinguishing characteristics such as aromatic content or presence of lead alkyls. As a result, comparison of results among studies using open and closed vessels, different ages and species of test animals and different gasoline types, is difficult.

The bulk of the available literature on gasoline relates to the environmental impact of monoaromatic (BTEx) and diaromatic (naphthalene, methylnaphthalenes) constituents. In general, non-oxygenated gasoline exhibits some short-term toxicity to freshwater and marine organisms, especially under closed vessel or flow-through exposure conditions in the laboratory. The components which are the most prominent in the water soluble fraction and cause aquatic toxicity, are also highly volatile and can be readily biodegraded by microorganisms.

This material is expected to be toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment.

48 hour(s) LC50: 3.0 mg/l (Daphnia magna)
96 hour(s) LC50: 1.8 mg/l (Mysidopsis bahia)
96 hour(s) LC50: 8.3 mg/l (Cyprinodon variegatus)
96 hour(s) LC50: 2.7 mg/l (Oncorhynchus mykiss)

MOBILITY

No data available.

PERSISTENCE AND DEGRADABILITY

This material is expected to be readily biodegradable. Following spillage, the more volatile components of gasoline will be rapidly lost, with concurrent dissolution of these and other constituents into the water. Factors such as local environmental conditions (temperature, wind, mixing or wave action, soil type, etc), photo-oxidation, biodegradation and adsorption onto suspended sediments, can contribute to the weathering of spilled gasoline.

The aqueous solubility of non-oxygenated unleaded gasoline, based on analysis of benzene, toluene, ethylbenzene+xylenes and naphthalene, is reported to be 112 mg/l. Solubility data on individual gasoline constituents also available.

POTENTIAL TO BIOACCUMULATE

Bioconcentration Factor: No data available.

Octanol/Water Partition Coefficient: 2 - 7

SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by international, country, or local laws and regulations.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT Shipping Description: UN1203, GASOLINE, 3, II; OPTIONAL DISCLOSURE: UN1203, GASOLINE, 3, II, MARINE POLLUTANT (GASOLINE)

IMO/IMDG Shipping Description: UN1203, GASOLINE, 3, II, FLASH POINT SEE SECTION 5 OR 9, MARINE POLLUTANT (GASOLINE)

ICAO/IATA Shipping Description: UN1203, GASOLINE, 3, II

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code:

Not applicable

SECTION 15 REGULATORY INFORMATION

EPCRA 311/312 CATEGORIES:	1. Immediate (Acute) Health Effects:	YES	
	2. Delayed (Chronic) Health Effects:	YES	
	3. Fire Hazard:		YES
	4. Sudden Release of Pressure Hazard:	NO	
	5. Reactivity Hazard:		NO

REGULATORY LISTS SEARCHED:

01-1=IARC Group 1	03=EPCRA 313
01-2A=IARC Group 2A	04=CA Proposition 65
01-2B=IARC Group 2B	05=MA RTK
02=NTP Carcinogen	06=NJ RTK
	07=PA RTK

The following components of this material are found on the regulatory lists indicated.

Gasoline	01-2B, 07
Toluene	04, 05, 06, 07
Xylene	03, 05, 06, 07
Butane	05, 06, 07
Ethanol	01-1, 02, 04, 05, 06, 07
Benzene	01-1, 02, 03, 04, 05, 06, 07
Hexane	05, 06, 07
Heptane	05, 06, 07
Ethylbenzene	01-2B, 03, 04, 05, 06, 07
Cyclohexane	05, 06, 07
Naphthalene	01-2B, 02, 04, 05, 06, 07
Methylcyclohexane	05, 06

CERCLA REPORTABLE QUANTITIES(RQ)/EPCRA 302 THRESHOLD PLANNING QUANTITIES(TPQ):

Component	Component RQ	Component TPQ	Product RQ
Benzene	10 lbs	None	186 lbs
Cyclohexane	1000 lbs	None	34188 lbs
Ethylbenzene	1000 lbs	None	34964 lbs
Hexane	5000 lbs	None	129149 lbs
Naphthalene	100 lbs	None	4000 lbs
Toluene	1000 lbs	None	2627 lbs
Xylene (contains o-, m-, & p- xylene isomers in varying amounts)	100 lbs	None	649 lbs

CHEMICAL INVENTORIES:

All components comply with the following chemical inventory requirements: AICS (Australia), DSL (Canada), EINECS (European Union), ENCS (Japan), IECSC (China), KECI (Korea), PICCS (Philippines), TSCA (United States).

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 1 Flammability: 3 Reactivity: 0

HMIS RATINGS: Health: 2* Flammability: 3 Reactivity: 0

(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *-Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

Additional Product Number(s): 201003, 201004, 201006, 201007, 201008, 201010, 201011, 201018, 201021, 201025, 201031, 201032, 201033, 201034, 201036, 201037, 201038, 201041, 201043, 201046, 201048, 201064, 201208, 201210, 201211, 201212, 201230, 201231, 201232, 201260, 201261, 201262, 201271, 201272, 201273, 201280, 201281, 201282, 201288, 201290, 201291, 201292, 201851, 201852, 201858, 201859, 201860, 204004, 204005, 204012, 204013, 204024, 204025, 204048, 204049, 204072, 204073, 204090, 204091, 204106, 204107, 204118, 204119, 204142, 204143, 204166, 204167, 204190, 204191, 204202, 204203, 204209, 204214, 204215, 204226, 204227, 204250, 204251, 204274, 204275, 204292, 204293, 204325, 204326, 204360, 204361, 204366, 204367, 204372, 204373, 204378, 204379, 204384, 204385, 204390, 204391, 204396, 204397, 204402, 204403, 204408, 204409, 204414, 204415, 204420, 204421, 204426, 204427, 204432, 204433, 204438, 204439, 204468, 204469, 204486, 204487, 204504, 204505, 204522, 204523, 204540, 204541, 204558, 204559, 204576, 204577, 204594, 204595, 204612, 204613, 204630, 204631, 204648, 204649, 204666, 204667, 204692, 204693, 204698, 204699, 204704, 204705, 204710, 204711, 204723, 204724, 204729, 204730

REVISION STATEMENT: SECTION 02 - Precautionary Statements information was modified.

SECTION 03 - Composition information was added.
 SECTION 03 - Composition information was modified.
 SECTION 05 - Extinguishing Media information was modified.
 SECTION 07 - Precautionary Measures information was modified.
 SECTION 07 - Static Hazards information was modified.
 SECTION 08 - Occupational Exposure Limit Table information was modified.
 SECTION 09 - Physical/Chemical Properties information was modified.
 SECTION 11 - Additional Toxicology Information information was modified.
 SECTION 12 - Ecological Information information was modified.
 SECTION 13 - Disposal Considerations information was modified.
 SECTION 14 - DOT Classification information was added.
 SECTION 14 - DOT Classification information was deleted.
 SECTION 14 - ICAO Classification information was added.
 SECTION 14 - ICAO Classification information was deleted.
 SECTION 14 - IMO Classification information was added.
 SECTION 14 - IMO Classification information was deleted.
 SECTION 15 - Regulatory Information information was modified.

Revision Date: December 10, 2018

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit
GHS - Globally Harmonized System	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Governmental Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	SDS - Safety Data Sheet
HMIS - Hazardous Materials Information System	NFPA - National Fire Protection Association (USA)
DOT - Department of Transportation (USA)	NTP - National Toxicology Program (USA)
IARC - International Agency for Research on Cancer	OSHA - Occupational Safety and Health Administration
NCEL - New Chemical Exposure Limit	EPA - Environmental Protection Agency
SCBA - Self-Contained Breathing Apparatus	

Prepared according to the 29 CFR 1910.1200 (2012) by Chevron Energy Technology Company, 6001 Bollinger Canyon Road, San Ramon, CA 94583.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

P. WATER RESOURCES

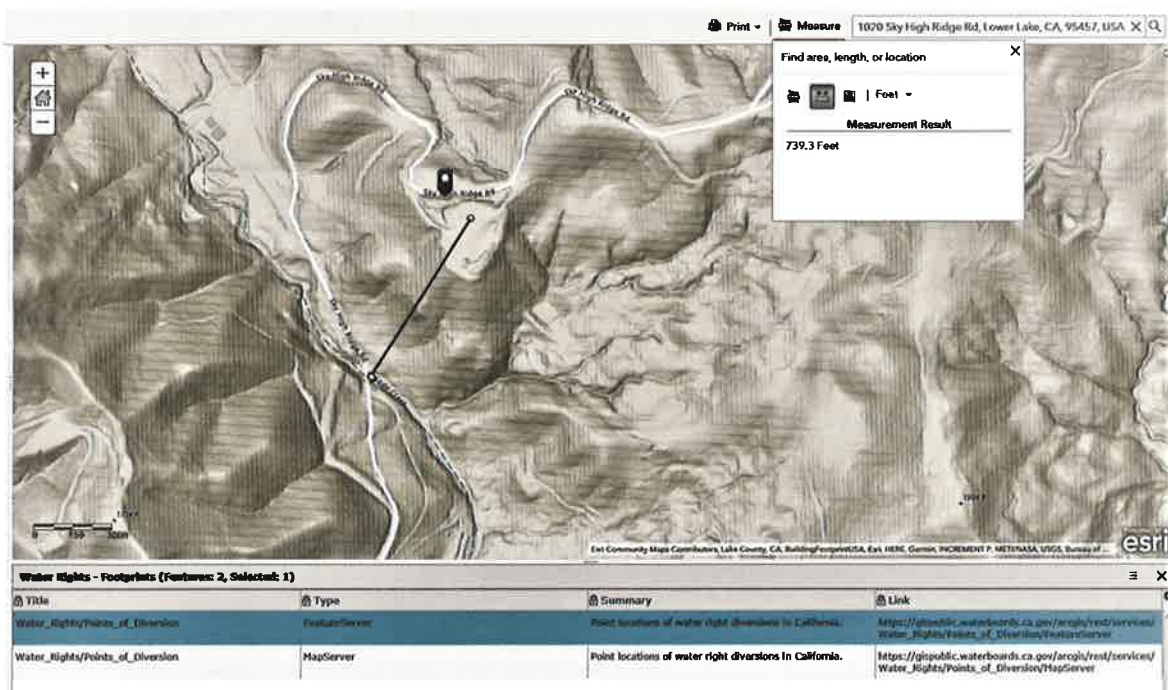
Surface water

Infinity Cannabis Growth, LLC located on the lot APN 122-300-01 of lake county. The project is proposing to use existing well water with a water filtration system. ICG does not plan to apply to use surface water diversion from any creek, stream, or lake.

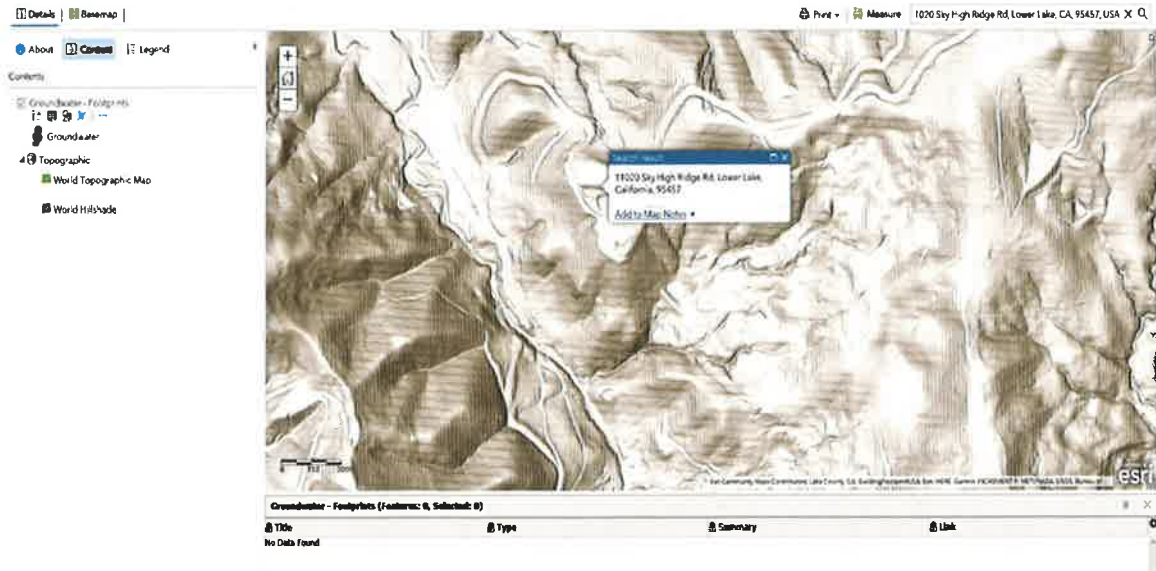
Ground Water

The project area soil consisted of light brown loam over a sandstone bedrock. 7 The Project Property is not located within any groundwater areas identified in the 2006 Lake County Groundwater Management Plan.

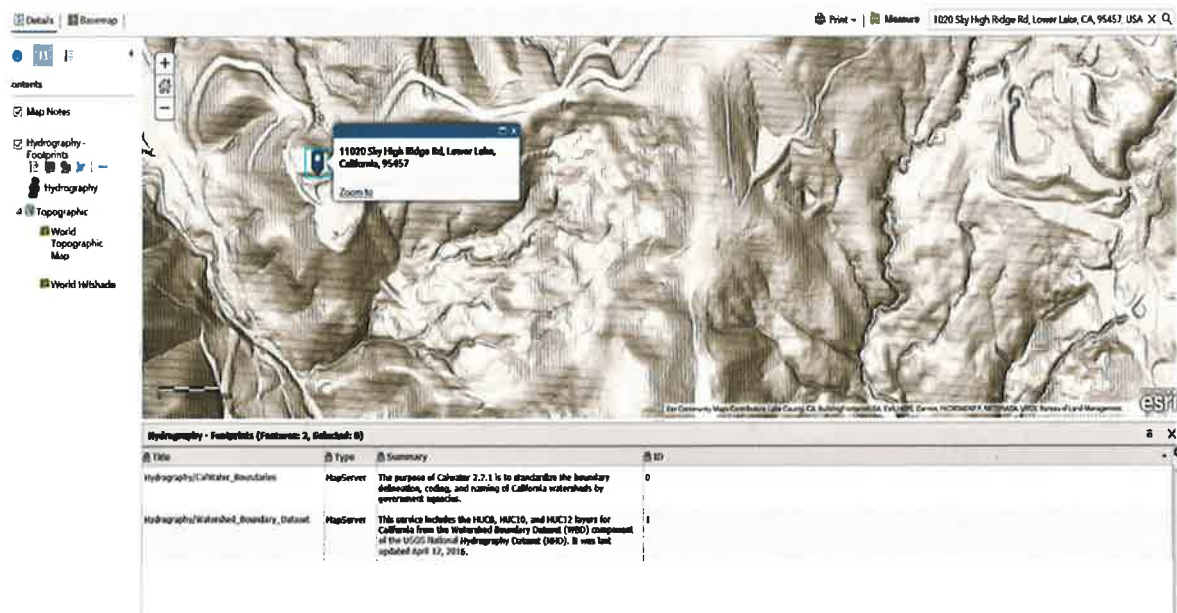
Additional Picture and Map attached



The Distance between cannabis cultivation area and soda creek is proximally 739.3 Feet
At this point, ICG operation will not impact any surface of the soda creek.



Searching information from <http://www.arcgis.com/home/webmap/>
ICG operation will not have any impact to the groundwater.



Searching information from <http://www.arcgis.com/home/webmap/>
Map surveyor for Hydrography with Summary report

Q. WATER USED

Water Sources

Infinity Cannabis Growth, LLC has only one legal water sources for the proposed cultivation operation on the Project Property, APN 122-300-01. ICG will supply water by using well located on the property. The well was drilled in 2011 to a depth of 300 feet with an estimated yield of 8 GPM (Well Completion Report attached)

Irrigation system and Methodology

ICG will use a solar system to power a submersible well water pump to fill one 5,000-gallon water storage tank located and a higher elevation on the property. The storage tank will be equipped with a float valve to shut off the water flow from the well pump and prevent overflow and runoff of irrigation water when at full capacity. A combination of PVC and HDPE water lines will be on the discharge side of the water storage and supply by gravity fed irrigation water to the proposed cultivation areas. The water irrigation lines will be equipped with the necessary safety valves/shut off valves capable of shutting off the flow of water so that waste and runoff is prevented/minimized when leaks occur and repairs are needed. Inline water meter will be installed that is compliant with California Code of Regulations, Title 23, Division 3, Chapter 2.7. ICG staff will maintain a monthly water meter reading records for a minimum of seven years and make them available to Water Board, CDFW, and Lake County staff upon request. The irrigation system to the cultivation area(s) will be composed of buried PVC piping and black poly tubing, drip systems, and micro-spray emitters. Additional irrigation may be applied by hand using a garden hose.

Water Conservation

The Water Conservation and Use requirements outlined in the SWRCB's Cannabis General Order, ICG will implement the following Best Practical Treatment and Control (BPTC) measures to conserve water resources:

- ICG staff will regularly inspect their entire water delivery system for leaks and immediately repair any leaky faucets, pipes, connectors, or other leaks.
- ICG apply weed-free mulch in cultivation areas that do not have groundcover to conserve soil moisture and minimize evaporative loss.
- ICG will implement water conserving irrigation methods (drip or trickle and micro spray irrigation)
- ICG will maintain daily records of all water used for irrigation of cannabis. Daily records will be calculated by using a measuring device (inline water meter) installed on the main irrigation supply line between the water storage area and cultivation area.

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Taxon	Common Name	State Status	State List Date	Federal Status	Federal List Date	Notes
<i>Brodiaea rosea</i>	Indian Valley brodiaea	SE	197909XX			Scientific name at time of listing: <i>Brodiaea coronaria</i> ssp. <i>rosea</i>
<i>Calamagrostis foliosa</i>	leafy reed grass	SR	197911XX			
<i>Calochortus dunnii</i>	Dunn's mariposa-lily	SR	197911XX			
<i>Calochortus persistens</i>	Siskiyou mariposa-lily	SR	198207XX			FC on 20040504; removed from FC list on 20151008.
<i>Calochortus tiburonensis</i>	Tiburon mariposa-lily	ST	198705XX	FT	19950203	
<i>Calyptidium puichellum</i>	Mariposa pussypaws			FT	19981014	
<i>Calystegia stebbinsii</i>	Stebbins' morning-glory	SE	198108XX	FE	19961018	
<i>Camissonia benitensis</i>	San Benito evening-primrose			FT	19850212	
<i>Carex albida</i>	white sedge	SE	197911XX	FE	19971022	Current taxonomic treatment considers <i>Carex albida</i> as a synonym of <i>Carex lemmonii</i> , a common taxon. No longer tracked by CNDDDB.
<i>Carex tompkinsii</i>	Tompkins' sedge	SR	197911XX			
<i>Carpenteria californica</i>	tree-anemone	ST	199001XX			
<i>Castilleja affinis</i> var. <i>neglecta</i>	Tiburon paintbrush	ST	199001XX	FE	19950203	Scientific name at time of listing: <i>Castilleja affinis</i> ssp. <i>neglecta</i>
<i>Castilleja campestris</i> var. <i>succulenta</i>	succulent owl's-clover	SE	197909XX	FT	19970326	Scientific name at time of listing: <i>Castilleja campestris</i> ssp. <i>succulenta</i>
<i>Castilleja cinerea</i>	ash-gray paintbrush			FT	19981014	
<i>Castilleja gleasoni</i>	Mt. Gleason paintbrush	SR	198207XX			
<i>Castilleja grisea</i>	San Clemente Island paintbrush	SE	198204XX	FT FE	20130726 19770912	
<i>Castilleja mollis</i>	soft-leaved paintbrush			FE	19970731	
<i>Castilleja uliginosa</i>	Pitkin Marsh paintbrush	SE	197811XX			
<i>Caulanthus californicus</i>	California jewel-flower	SE	198701XX	FE	19900719	
<i>Caulanthus stenocarpus</i>	slender-pod jewel-flower	Delisted SR	200804XX 197911XX			Current taxonomic treatment considers <i>Caulanthus stenocarpus</i> as a synonym of <i>Caulanthus heterophyllus</i> , a common taxon.
<i>Ceanothus ferrisiae</i>	Coyote ceanothus			FE	19950203	Scientific name at time of listing: <i>Ceanothus ferrisiae</i>
<i>Ceanothus hearstiorum</i>	Hearsts' ceanothus	SR	198108XX			
<i>Ceanothus maritimus</i>	maritime ceanothus	SR	197811XX			
<i>Ceanothus masonii</i>	Mason's ceanothus	SR	197811XX			
<i>Ceanothus ophiochilus</i>	Vail Lake ceanothus	SE	199401XX	FT	19981013	
<i>Ceanothus roderickii</i>	Pine Hill ceanothus	SR	198207XX	FE	19961018	
<i>Cercocarpus traskiae</i>	Catalina Island mountain-mahogany	SE	198204XX	FE	19970808	
<i>Chlorogalum purpureum</i> var. <i>purpureum</i>	Santa Lucia purple amole			FT	20000320	USFWS listed the entire species, <i>Chlorogalum purpureum</i> .

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Taxon	Common Name	State Status	State List Date	Federal Status	Federal List Date	Notes
<i>Chlorogalum purpureum</i> var. <i>reductum</i>	Camatta Canyon amole	SR	197811XX	FT	20000320	USFWS listed the entire species, <i>Chlorogalum purpureum</i> .
<i>Chloropyron maritimum</i> ssp. <i>maritimum</i>	salt marsh bird's-beak	SE	197907XX	FE	19781029	Scientific name at time of listing: <i>Cordylanthus maritimus</i> ssp. <i>maritimus</i>
<i>Chloropyron molle</i> ssp. <i>molle</i>	soft bird's-beak	SR	197907XX	FE	19971120	Scientific name at time of listing: <i>Cordylanthus mollis</i> ssp. <i>mollis</i> . Synonym: soft salty bird's-beak.
<i>Chloropyron palmatum</i>	palmate-bracted bird's-beak	SE	198405XX	FE	19860701	Scientific name at time of listing: <i>Cordylanthus palmatus</i> . Synonym: palmate salty bird's-beak.
<i>Chorizanthe howellii</i>	Howell's spineflower	ST	198701XX	FE	19920622	
<i>Chorizanthe orcuttiana</i>	Orcutt's spineflower	SE	197911XX	FE	19961007	
<i>Chorizanthe parryi</i> var. <i>fernandina</i>	San Fernando Valley spineflower	SE	200108XX			FC on 20040504, reclassified as FPT on 20160915, Proposed Rule withdrawn on 20180315.
<i>Chorizanthe pungens</i> var. <i>hartwegiana</i>	Ben Lomond spineflower			FE	19940204	
<i>Chorizanthe pungens</i> var. <i>pungens</i>	Monterey spineflower			FT	19940204	
<i>Chorizanthe robusta</i> var. <i>hartwegii</i>	Scotts Valley spineflower			FE	19940204	
<i>Chorizanthe robusta</i> var. <i>robusta</i>	robust spineflower			FE	19940204	
<i>Chorizanthe valida</i>	Sonoma spineflower	SE	199001XX	FE	19920622	
<i>Cirsium ciliolatum</i>	Ashland thistle	SE	198209XX			
<i>Cirsium fontinale</i> var. <i>fontinale</i>	fountain thistle	SE	197907XX	FE	19950203	Synonym: Crystal Springs fountain thistle
<i>Cirsium fontinale</i> var. <i>obispoense</i>	Chorro Creek bog thistle	SE	199306XX	FE	19941215	Synonym: San Luis Obispo fountain thistle
<i>Cirsium hydrophilum</i> var. <i>hydrophilum</i>	Suisun thistle			FE	19971120	
<i>Cirsium rathophilum</i>	surf thistle	ST	199002XX			
<i>Cirsium scariosum</i> var. <i>loncholepis</i>	La Graciosa thistle	ST	199002XX	FE	20000320	Scientific name at time of listing: <i>Cirsium loncholepis</i>
<i>Clarkia franciscana</i>	Presidio clarkia	SE	197811XX	FE	19950203	
<i>Clarkia imbricata</i>	Vine Hill clarkia	SE	197811XX	FE	19971022	
<i>Clarkia lingulata</i>	Merced clarkia	SE	198701XX			
<i>Clarkia speciosa</i> ssp. <i>immaculata</i>	Pismo clarkia	SR	197811XX	FE	19941215	
<i>Clarkia springvillensis</i>	Springville clarkia	SE	197909XX	FT	19981014	
<i>Cordylanthus nidularius</i>	Mt. Diablo bird's-beak	SR	197811XX			
<i>Cordylanthus rigidus</i> ssp. <i>littoralis</i>	seaside bird's-beak	SE	198201XX			
<i>Cordylanthus tenuis</i> ssp. <i>capillaris</i>	Pennell's bird's-beak	SR	197811XX	FE	19950203	
<i>Croton wigginsii</i>	Wiggins' croton	SR	198201XX			
<i>Cryptantha roosiorum</i>	bristlecone cryptantha	SR	198207XX			
<i>Dedeckera eurekaensis</i>	July gold	SR	197811XX			
<i>Deinandra arida</i>	Red Rock tarplant	SR	198207XX			Scientific name at time of listing: <i>Hemizonia arida</i>

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Taxon	Common Name	State Status	State List Date	Federal Status	Federal List Date	Notes
<i>Deinandra bacigalupii</i>	Livermore tarplant	SE	20171001			
<i>Deinandra conjugens</i>	Otay tarplant	SE	197911XX	FT	19981013	Scientific name at time of listing: <i>Hemizonia conjugens</i>
<i>Deinandra increscens</i> ssp. <i>villosa</i>	Gaviota tarplant	SE	199001XX	FE	20000320	Scientific name at time of listing: <i>Hemizonia increscens</i> ssp. <i>villosa</i>
<i>Deinandra minthornii</i>	Santa Susana tarplant	SR	197811XX			Scientific name at time of listing: <i>Hemizonia minthornii</i>
<i>Deinandra mohavensis</i>	Mojave tarplant	SE	198108XX			Scientific name at time of listing: <i>Hemizonia mohavensis</i>
<i>Delphinium bakeri</i>	Baker's larkspur	SE	200704XX	FE	20000126	
<i>Delphinium hesperium</i> ssp. <i>cuyamaca</i>	Cuyamaca larkspur	SR	198207XX			
<i>Delphinium luteum</i>	golden larkspur	SR	197909XX	FE	20000126	
<i>Delphinium variegatum</i> ssp. <i>kinkiense</i>	San Clemente Island larkspur	SE	197909XX	FE	19770912	
<i>Dieteria asteroides</i> var. <i>lagunensis</i>	Mount Laguna aster	SR	197909XX			Scientific name at time of listing: <i>Machaeranthera asteroides</i> var. <i>lagunensis</i>
<i>Diplacus vandenbergensis</i>	Vandenberg monkeyflower			FE	20140925	Scientific name when proposed as a Federal Candidate: <i>Mimulus fremontii</i> var. <i>vandenbergensis</i>
<i>Dithyrea maritima</i>	beach spectaclepod	ST	199002XX			
<i>Dodecahema leptoceras</i>	slender-horned spineflower	SE	198201XX	FE	19870928	
<i>Downingia concolor</i> var. <i>brevior</i>	Cuyamaca Lake downingia	SE	198202XX			
<i>Dudleya abramsii</i> ssp. <i>setchellii</i>	Santa Clara Valley dudleya			FE	19950203	Scientific name at time of listing: <i>Dudleya setchellii</i>
<i>Dudleya brevifolia</i>	short-leaved dudleya	SE	198201XX			
<i>Dudleya cymosa</i> ssp. <i>agouensis</i>	Agoura Hills dudleya			FT	19970129	USFWS listed the more encompassing <i>Dudleya cymosa</i> ssp. <i>ovatifolia</i> from which ssp. <i>agouensis</i> was split.
<i>Dudleya cymosa</i> ssp. <i>marcescens</i>	marcescent dudleya	SR	197811XX	FT	19970129	
<i>Dudleya cymosa</i> ssp. <i>ovatifolia</i>	Santa Monica dudleya			FT	19970129	
<i>Dudleya nesiotica</i>	Santa Cruz Island dudleya	SR	197911XX	FT	19970731	
<i>Dudleya parva</i>	Conejo dudleya			FT	19970129	Scientific name at time of listing: <i>Dudleya abramsii</i> ssp. <i>parva</i>
<i>Dudleya stolonifera</i>	Laguna Beach dudleya	ST	198701XX	FT	19981013	
<i>Dudleya traskiae</i>	Santa Barbara Island dudleya	SE	197911XX	FE	19780527	
<i>Dudleya verityi</i>	Verity's dudleya			FT	19970129	
<i>Enceliopsis nudicaulis</i> var. <i>corrugata</i>	Ash Meadows daisy			FT	19850520	
<i>Eremalche kernensis</i>	Kern mallow			FE	19900719	
<i>Eremogone ursina</i>	Big Bear Valley sandwort			FT	19981014	Scientific name at time of listing: <i>Arenaria ursina</i>
<i>Eriastrum densifolium</i> ssp. <i>sanctorum</i>	Santa Ana River woollystar	SE	198701XX	FE	19870928	

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Taxon	Common Name	State Status	State List Date	Federal Status	Federal List Date	Notes
<i>Eriastrum hooveri</i>	Hoover's woolly-star			FDR	20031007	
<i>Eriastrum tracyi</i>	Tracy's eriastrum	SR	198207XX			
<i>Erigeron parishii</i>	Parish's daisy			FT	19940824	
<i>Eriodictyon altissimum</i>	Indian Knob mountainbalm	SE	197907XX	FE	19941215	
<i>Eriodictyon capitatum</i>	Lompoc yerba santa	SR	197909XX	FE	20000320	
<i>Eriogonum alpinum</i>	Trinity buckwheat	SE	197907XX			
<i>Eriogonum apricum</i> var. <i>apricum</i>	lone buckwheat	SE	198108XX	FE	19990526	USFWS listed the entire species, <i>Eriogonum apricum</i> .
<i>Eriogonum apricum</i> var. <i>prostratum</i>	Irish Hill buckwheat	SE	198701XX	FE	19990526	USFWS listed the entire species, <i>Eriogonum apricum</i> .
<i>Eriogonum</i> <i>butterworthianum</i>	Butterworth's buckwheat	SR	197911XX			
<i>Eriogonum crocatum</i>	conejo buckwheat	SR	197909XX			
<i>Eriogonum giganteum</i> var. <i>compactum</i>	Santa Barbara Island buckwheat	SR	197911XX			
<i>Eriogonum grande</i> var. <i>timorum</i>	San Nicolas Island buckwheat	SE	197911XX			Scientific name at time of listing: <i>Eriogonum grande</i> ssp. <i>timorum</i> . CCR lists common name as San Nicholas Island buckwheat.
<i>Eriogonum kelloggii</i>	Kellogg's buckwheat	SE	198204XX			FC on 20040504; removed from FC list on 20140918.
<i>Eriogonum kennedyi</i> var. <i>austromontanum</i>	southern mountain buckwheat			FT	19981014	
<i>Eriogonum ovalifolium</i> var. <i>vineum</i>	Cushenbury buckwheat			FE	19940824	
<i>Eriogonum thornei</i>	Thorne's buckwheat	SE	197909XX			Scientific name at time of listing: <i>Eriogonum ericifolium</i> var. <i>thornei</i>
<i>Eriogonum twisselmannii</i>	Twisselmann's buckwheat	SR	198207XX			
<i>Eriophyllum congdonii</i>	Congdon's woolly sunflower	SR	198207XX			
<i>Eriophyllum latilobum</i>	San Mateo woolly sunflower	SE	199206XX	FE	19950203	
<i>Eryngium aristulatum</i> var. <i>parishii</i>	San Diego button-celery	SE	197907XX	FE	19930803	
<i>Eryngium constancei</i>	Loch Lomond button-celery	SE	198701XX	FE	19870122	Emergency FE listing 19850801; formal FE status on 19870122. Synonym: Loch Lomond coyote thistle.
<i>Eryngium racemosum</i>	Delta button-celery	SE	198108XX			
<i>Erysimum capitatum</i> var. <i>angustatum</i>	Contra Costa wallflower	SE	197811XX	FE	19780527	
<i>Erysimum menziesii</i>	Menzies' wallflower	SE	198409XX	FE	19920622	USFWS separately listed three subspecies as endangered; <i>E. menziesii</i> ssp. <i>eurekaense</i> , <i>E. menziesii</i> ssp. <i>menziesii</i> , and <i>E. menziesii</i> ssp. <i>yadonii</i> . Current taxonomic treatment no longer recognizes subspecies within <i>E. menziesii</i> .
<i>Erysimum teretifolium</i>	Santa Cruz wallflower	SE	198108XX	FE	19940204	
<i>Euphorbia hooveri</i>	Hoover's spurge			FT	19970326	Scientific name at time of listing: <i>Chamaesyce hooveri</i>

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Taxon	Common Name	State Status	State List Date	Federal Status	Federal List Date	Notes
<i>Fremontodendron decumbens</i>	Pine Hill flannelbush	SR	197907XX	FE	19961018	Scientific name at time of listing: <i>Fremontodendron californicum</i> ssp. <i>decumbens</i>
<i>Fremontodendron mexicanum</i>	Mexican flannelbush	SR	198207XX	FE	19981013	
<i>Fritillaria gentneri</i>	Gentner's fritillary			FE	19991210	
<i>Fritillaria roderickii</i>	Roderick's fritillary	SE	197911XX			
<i>Fritillaria striata</i>	striped adobe-lily	ST	198701XX			
<i>Galium angustifolium</i> ssp. <i>borregoense</i>	Borrego bedstraw	SR	197909XX			
<i>Galium buxifolium</i>	box bedstraw	SR	197911XX	FE	19970731	
<i>Galium californicum</i> ssp. <i>sierrae</i>	El Dorado bedstraw	SR	197911XX	FE	19961018	
<i>Galium catalinense</i> ssp. <i>acrispum</i>	San Clemente Island bedstraw	SE	198204XX			
<i>Gilia tenuiflora</i> ssp. <i>arenaria</i>	sand gilia	ST	198701XX	FE	19920622	Synonym: Monterey gilia
<i>Gilia tenuiflora</i> ssp. <i>hoffmannii</i>	Hoffmann's slender-flowered gilia			FE	19970731	
<i>Gratiola heterosepala</i>	Boggs Lake hedge-hyssop	SE	197811XX			
<i>Grindelia fraxinipratensis</i>	Ash Meadows gumplant			FT	19850520	Scientific name at time of listing: <i>Grindelia fraxino-pratensis</i>
<i>Hazardia orcuttii</i>	Orcutt's hazardia	ST	200208XX			FC on 20040504; removed from FC list on 20131122.
<i>Helianthemum Greenei</i>	island rush-rose			FT	19970731	
<i>Helianthus niveus</i> ssp. <i>tephrodes</i>	Algodones Dunes sunflower	SE	197911XX			
<i>Hesperocyparis abramsiana</i> var. <i>abramsiana</i>	Santa Cruz cypress	SE	197911XX	FT FE	20160321 19870108	USFWS listed the entire species, <i>Cupressus abramsiana</i> , as FE on 19870108; reclassified as FT on 20160321.
<i>Hesperocyparis abramsiana</i> var. <i>butanoensis</i>	Butano Ridge cypress	SE	197911XX	FT FE	20160321 19870108	USFWS listed the entire species, <i>Cupressus abramsiana</i> , as FE on 19870108; reclassified as FT on 20160321.
<i>Hesperocyparis goveniana</i>	Gowen cypress			FT	19980812	Scientific name at time of listing: <i>Cupressus goveniana</i> ssp. <i>goveniana</i>
<i>Hesperolinon congestum</i>	Marin western flax	ST	199206XX	FT	19950203	
<i>Hesperolinon didymocarpum</i>	Lake County western flax	SE	198108XX			
<i>Holmgrenanthe petrophila</i>	rock lady	SR	198207XX			Scientific name at time of listing: <i>Maurandya petrophila</i>
<i>Holocarpha macradenia</i>	Santa Cruz tarplant	SE	197909XX	FT	20000320	
<i>Howellia aquatilis</i>	water howellia			FT	19940714	
<i>Ivesia callida</i>	Tahquitz ivesia	SR	198207XX			
<i>Ivesia webberi</i>	Webber's ivesia			FT	20140703	FC on 20040504; moved to FPT on 20130802.
<i>Lasthenia burkei</i>	Burke's goldfields	SE	197909XX	FE	19911202	
<i>Lasthenia conjugens</i>	Contra Costa goldfields			FE	19970618	
<i>Layia carnosa</i>	beach layia	SE	199001XX	FE	19920622	
<i>Leptosiphon croceus</i>	coast yellow leptosiphon	SE	20190401			

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Taxon	Common Name	State Status	State List Date	Federal Status	Federal List Date	Notes
<i>Lessingia germanorum</i>	San Francisco lessingia	SE	199001XX	FE	19970619	Synonym: <i>Lessingia germanorum</i> var. <i>germanorum</i>
<i>Lewisia congonii</i>	Congdon's lewisia	SR	198207XX			
<i>Lilaeopsis masonii</i>	Mason's lilaeopsis	SR	197911XX			
<i>Lilium occidentale</i>	western lily	SE	198201XX	FE	19940817	
<i>Lilium pardalinum</i> ssp. <i>pitkinense</i>	Pitkin Marsh lily	SE	197811XX	FE	19971022	
<i>Limnanthes alba</i> ssp. <i>parishii</i>	Parish's meadowfoam	SE	197907XX			Scientific name at time of listing: <i>Limnanthes gracilis</i> var. <i>parishii</i>
<i>Limnanthes bakeri</i>	Baker's meadowfoam	SR	197811XX			
<i>Limnanthes douglasii</i> ssp. <i>sulphurea</i>	Point Reyes meadowfoam	SE	198204XX			
<i>Limnanthes floccosa</i> ssp. <i>californica</i>	Butte County meadowfoam	SE	198202XX	FE	19920608	
<i>Limnanthes vinculans</i>	Sebastopol meadowfoam	SE	197911XX	FE	19911202	
<i>Lithophragma maximum</i>	San Clemente Island woodland star	SE	198202XX	FE	19970808	
<i>Lupinus citrinus</i> var. <i>deflexus</i>	Mariposa lupine	ST	199001XX			
<i>Lupinus constancei</i>	The Lassics lupine	SE	20190401			
<i>Lupinus milo-bakeri</i>	Milo Baker's lupine	ST	198701XX			
<i>Lupinus nipomensis</i>	Nipomo Mesa lupine	SE	198701XX	FE	20000320	
<i>Lupinus padre-crowleyi</i>	Father Crowley's lupine	SR	198108XX			
<i>Lupinus tidestromii</i>	Tidestrom's lupine	SE	198701XX	FE	19920622	Federally listed at the species level; state listed as <i>Lupinus tidestromii</i> var. <i>tidestromii</i> (plants of <i>L. tidestromii</i> from Monterey County only)
<i>Mahonia sonnei</i>	Truckee barberry	Delisted SE	200804XX 197907XX	Delisted FE	20031001 19791106	Synonym: <i>Berberis sonnei</i> . Current taxonomic treatment considers <i>B. sonnei</i> as a form of the common <i>B. aquifolium</i> var. <i>repens</i> , and not a separate taxon.
<i>Malacothamnus clementinus</i>	San Clemente Island bush-mallow	SE	198202XX	FE	19770912	
<i>Malacothamnus fasciculatus</i> var. <i>nesioticus</i>	Santa Cruz Island bush-mallow	SE	197911XX	FE	19970731	
<i>Malacothrix indecora</i>	Santa Cruz Island malacothrix			FE	19970731	
<i>Malacothrix squalida</i>	island malacothrix			FE	19970731	
<i>Monardella viminea</i>	willowy monardella	SE	197911XX	FE	19981013	Scientific name at time of listing: <i>Monardella linoides</i> ssp. <i>viminea</i>
<i>Monolopia congonii</i>	San Joaquin woollythreads			FE	19900719	Synonym: <i>Lembertia congonii</i>
<i>Nasturtium gambelii</i>	Gambel's water cress	ST	199001XX	FE	19930803	Scientific name at time of listing: <i>Rorippa gambelii</i>
<i>Navarretia fossalis</i>	spreading navarretia			FT	19981013	
<i>Navarretia leucocephala</i> ssp. <i>pauciflora</i>	few-flowered navarretia	ST	199001XX	FE	19970618	Synonym: <i>Navarretia pauciflora</i>
<i>Navarretia leucocephala</i> ssp. <i>plieantha</i>	many-flowered navarretia	SE	197911XX	FE	19970618	

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<i>Nemacladus twisselmannii</i>	Twisselmann's nemacladus	SR	198207XX			
<i>Neostapfia colusana</i>	Colusa grass	SE	197911XX	FT	19970326	
<i>Nitrophila mohavensis</i>	Amargosa nitrophila	SE	197911XX	FE	19850520	
<i>Noccaea fendleri</i> ssp. <i>californica</i>	Kneeland Prairie pennycress			FE	20000209	Scientific name at time of listing: <i>Thlapsi californicum</i>
<i>Nolina interrata</i>	Dehesa nolina	SE	197911XX			
<i>Oenothera californica</i> ssp. <i>eurekensis</i>	Eureka Dunes evening-primrose	SR	197811XX	FDR FE	20180329 19780527	Scientific name at time of listing: <i>Oenothera avita</i> ssp. <i>eurekensis</i> . FE on 19780527; removed from FE list on 20180329.
<i>Oenothera deltooides</i> ssp. <i>howellii</i>	Antioch Dunes evening-primrose	SE	197811XX	FE	19780527	
<i>Opuntia basilaris</i> var. <i>treleasei</i>	Bakersfield cactus	SE	199001XX	FE	19900719	Scientific name at time of listing: <i>Opuntia treleasei</i>
<i>Orcuttia californica</i>	California Orcutt grass	SE	197909XX	FE	19930803	
<i>Orcuttia inaequalis</i>	San Joaquin Valley Orcutt grass	SE	197909XX	FT	19970326	
<i>Orcuttia pilosa</i>	hairy Orcutt grass	SE	197909XX	FE	19970326	
<i>Orcuttia tenuis</i>	slender Orcutt grass	SE	197909XX	FT	19970326	
<i>Orcuttia viscida</i>	Sacramento Orcutt grass	SE	197907XX	FE	19970326	
<i>Ornithostaphylos oppositifolia</i>	Baja California birdbush	SE	200105XX			
<i>Packera ganderi</i>	Gander's ragwort	SR	198207XX			Scientific name at time of listing: <i>Senecio ganderi</i>
<i>Packera layneae</i>	Layne's ragwort	SR	197911XX	FT	19961018	Scientific name at time of listing: <i>Senecio layneae</i>
<i>Panicum acuminatum</i> var. <i>thermale</i>	Geysers panicum	SE	197809XX			Scientific name at time of listing: <i>Dichanthelium lanuginosum</i> var. <i>thermale</i>
<i>Pedicularis dudleyi</i>	Dudley's lousewort	SR	197909XX			
<i>Pentachaeta bellidiflora</i>	white-rayed pentachaeta	SE	199206XX	FE	19950203	
<i>Pentachaeta lyonii</i>	Lyon's pentachaeta	SE	199001XX	FE	19970129	
<i>Phacelia insularis</i> var. <i>insularis</i>	northern Channel Islands phacelia			FE	19970731	Synonym: island phacelia
<i>Phacelia stellaris</i>	Brand's star phacelia					FC on 20040504; removed from FC list on 20131122.
<i>Phlox hirsuta</i>	Yreka phlox	SE	198701XX	FE	20000203	
<i>Physaria kingii</i> ssp. <i>bernardina</i>	San Bernardino Mountains bladderpod			FE	19940824	Scientific name at time of listing: <i>Lesquerella kingii</i> ssp. <i>bernardina</i>
<i>Pinus albicaulis</i>	whitebark pine			FC	20100720	Not tracked by CNDDB.
<i>Piperia yadonii</i>	Yadon's rein orchid			FE	19980812	
<i>Plagiobothrys diffusus</i>	San Francisco popcornflower	SE	197909XX			
<i>Plagiobothrys strictus</i>	Calistoga popcornflower	ST	199001XX	FE	19971022	
<i>Pleuropogon hooverianus</i>	North Coast semaphore grass	ST	200208XX			
<i>Poa atropurpurea</i>	San Bernardino blue grass			FE	19981014	
<i>Poa napensis</i>	Napa blue grass	SE	197907XX	FE	19971022	
<i>Pogogyne abramsii</i>	San Diego mesa mint	SE	197907XX	FE	19781029	
<i>Pogogyne clareana</i>	Santa Lucia mint	SE	197911XX			

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<i>Pogogyne nudiuscula</i>	Otay Mesa mint	SE	198701XX	FE	19930803	
<i>Polygonum hickmanii</i>	Scotts Valley polygonum	SE	200410XX	FE	20030408	
<i>Potentilla basaltica</i>	Black Rock potentilla					FC on 20040504; removed from FC list on 20130802
<i>Potentilla hickmanii</i>	Hickman's cinquefoil	SE	197909XX	FE	19980812	
<i>Pseudobahia bahiifolia</i>	Hartweg's golden sunburst	SE	198108XX	FE	19970206	
<i>Pseudobahia peirsonii</i>	San Joaquin adobe sunburst	SE	198701XX	FT	19970206	
<i>Rorippa subumbellata</i>	Tahoe yellow cress	SE	198204XX			FC on 20040504; removed from FC list on 20151008.
<i>Rosa minutifolia</i>	small-leaved rose	SE	198910XX			
<i>Sanicula maritima</i>	adobe sanicle	SR	198108XX			
<i>Sanicula saxatilis</i>	rock sanicle	SR	198207XX			
<i>Sedella leiocarpa</i>	Lake County stonecrop	SE	199001XX	FE	19970618	Scientific name at time of listing: <i>Parvisedum leiocarpum</i>
<i>Sedum laxum</i> ssp. <i>eastwoodiae</i>	Red Mountain stonecrop					Scientific name at time of listing: <i>Sedum eastwoodiae</i> . FC on 20040504; removed from FC list on 20140918.
<i>Silbara filifolia</i>	Santa Cruz Island winged-rockcress			FE	19970808	
<i>Sidalcea covillei</i>	Owens Valley checkerbloom	SE	197907XX			
<i>Sidalcea hickmanii</i> ssp. <i>anomala</i>	Cuesta Pass checkerbloom	SR	197911XX			
<i>Sidalcea hickmanii</i> ssp. <i>parishii</i>	Parish's checkerbloom	SR	197911XX			
<i>Sidalcea keckii</i>	Keck's checkerbloom			FE	20000216	
<i>Sidalcea oregana</i> ssp. <i>valida</i>	Kenwood Marsh checkerbloom	SE	198201XX	FE	19971022	
<i>Sidalcea pedata</i>	bird-foot checkerbloom	SE	198201XX	FE	19840831	
<i>Sidalcea stipularis</i>	Scadden Flat checkerbloom	SE	198201XX			
<i>Silene campanulata</i> ssp. <i>campanulata</i>	Red Mountain catchfly	SE	198204XX			
<i>Streptanthus albidus</i> ssp. <i>albidus</i>	Metcalf Canyon jewel-flower			FE	19950203	
<i>Streptanthus glandulosus</i> ssp. <i>niger</i>	Tiburon jewel-flower	SE	199002XX	FE	19950203	Scientific name at time of listing: <i>Streptanthus niger</i>
<i>Suaeda californica</i>	California seablite			FE	19941215	
<i>Swallenia alexandrae</i>	Eureka Valley dune grass	SR	198108XX	FT FE	20180329 19780527	FE on 19780527; reclassified as FT on 20180329
<i>Taraxacum californicum</i>	California dandelion			FE	19981014	
<i>Thelypodium stenopetalum</i>	slender-petaled thelypodium	SE	198202XX	FE	19840831	
<i>Thermopsis macrophylla</i>	Santa Ynez false lupine	SR	198108XX			Scientific name at time of listing: <i>Thermopsis macrophylla</i> var. <i>agnina</i>
<i>Thysanocarpus conchuliferus</i>	Santa Cruz Island fringepod			FE	19970731	
<i>Trichostema austromontanum</i> ssp. <i>compactum</i>	Hidden Lake bluecurls			FDR FT	20180702 19981014	
<i>Trifolium amoenum</i>	showy rancheria clover			FE	19971022	

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Taxon	Common Name	State Status	State List Date	Federal Status	Federal List Date	Notes
<i>Trifolium polyodon</i>	Pacific Grove clover	SR	197909XX			
<i>Trifolium trichocalyx</i>	Monterey clover	SE	197911XX	FE	19980812	
<i>Tuctoria greenii</i>	Greene's tuctoria	SR	197909XX	FE	19970326	
<i>Tuctoria mucronata</i>	Crampton's tuctoria or Solano grass	SE	197907XX	FE	19780929	
<i>Verbena californica</i>	Red Hills vervain	ST	199408XX	FT	19981014	
<i>Verbesina dissita</i>	big-leaved crownbeard	ST	199001XX	FT	19961007	

State of California
Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Biogeographic Data Branch
California Natural Diversity Database (CNDDDB)

STATE AND FEDERALLY LISTED ENDANGERED AND THREATENED ANIMALS OF CALIFORNIA

August 7, 2019

This document contains a list of animal taxa found within California or off the coast of the State that have been classified as Endangered or Threatened by the California Fish & Game Commission (FGC; state listed) or by the U.S. Secretary of the Interior or the U.S. Secretary of Commerce (federally listed). This list also includes taxa that are official Candidates for state or federal listing, or have been officially Proposed for federal listing, as well as taxa that were once listed but have since been delisted.

State listing is pursuant to the California Endangered Species Act of 1984 (CESA; California Code of Regulations, Title 14, Chapter 6, §§783.0-787.9; Fish and Game Code Chapter 1.5, §§ 2050-2115.5). The designations "Endangered" and "Rare" were first established in 1970 by the original California Endangered Species Act, and taxa with a state list date of June 27, 1971 were protected under this regulation. In 1984, CESA was amended, at which time the "Rare" designation was changed to "Threatened," and on January 1, 1985, all animal species previously designated as "Rare" were reclassified as "Threatened." The official California listing of Endangered and Threatened animals is contained in the California Code of Regulations, Title 14, §670.5.

Federal listing is pursuant to the Federal Endangered Species Act of 1973, as amended (16 USC §§1531-1544; 50 CFR §§17.1-17.108). The federal agencies responsible for listing are the United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS). Prior federal regulations include the Endangered Species Conservation Act of 1969, and the Endangered Species Preservation Act of 1966, under which all species with a federal list date of March 11, 1967 were listed. The official federal listing of Endangered and Threatened animals is published in the Federal Register, 50 CFR §17.11

Abbreviation	Designation	Totals
SE	State Listed - Endangered	49
ST	State Listed - Threatened	40
SC	State Candidate for Listing	8
SCD	State Candidate for Delisting	0
SDR	State Delisted (Recovered)	2
SDE	State Delisted (Extinct)	2
FE	Federally Listed - Endangered	86
FT	Federally Listed - Threatened	41
FPE	Federally Proposed - Endangered	0
FPT	Federally Proposed - Threatened	1
FC	Federal Candidate for Listing	2
FPDE	Federally Proposed for Delisting (currently Endangered)	1
FPDT	Federally Proposed for Delisting (currently Threatened)	1
FDR	Federally Delisted (Recovered)	12
FDE	Federally Delisted (Extinct)	2
# Animal Taxa State-Listed Only (SE, ST, SCD)		39
# Animal Taxa Federally-Listed Only (FE, FPDE, FT, FPDT)		79
# Animal Taxa State- AND Federally-Listed		50
Total # State-Listed Taxa (SE, ST, SCD)		89
Total # Federally-Listed Taxa (FE, FPDE, FT, FPDT)		129
Total Number of Listed Animal Taxa		168

(Totals include subspecies, distinct population segments, and ecologically significant units when listed separately)

Common and scientific names are shown as they are in current usage, typically based on the NatureServe Natural Heritage Network, unless otherwise noted. If current nomenclature differs from that in state and federal listing documents, the nomenclature at the time of listing is provided in the notes. Synonyms, name changes, and other clarifying points are also noted. Where state and federal listings apply to different ranges, subspecies, or populations, each taxa will be listed separately, and statuses that apply to only a portion of the taxon, or that also encompass other taxa, will be shown in parentheses. Where state and federal listings differ in name, but represent the same biological unit, the common name will be listed using the California state listing; the federal name will be listed in the notes.

The “List Date” for final federal listing is the date the listing became effective. This is typically not the date of publication of the rule in the Federal Register; it is usually about 30 days after publication, but may be longer.

If an animal was previously listed and no longer has any listing status, the entry text is grey. If an animal was previously proposed or a candidate for listing, but the listing was not warranted or was revoked, the record has been removed from the table.

For taxa having more than one status entry, the current status is in bold and underlined. All dates are in the “YYYYMMDD” format.

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ABBREVIATIONS

CCR: California Code of Regulations
CDFW: California Department of Fish and Wildlife (previously Department of Fish and Game (DFG))
CESA: California Endangered Species Act
DPS: Distinct population segment
ESA: Endangered Species Act (Federal)
ESU: Evolutionarily significant unit
FGC: California Fish and Game Commission
NMFS: National Marine Fisheries Service
NOAA: National Oceanic and Atmospheric Administration
USFWS: United States Fish and Wildlife Service

ADDITIONAL RESOURCES

The California Fish and Game Commission publishes notices relating to changes to Title 14 of the California Code of Regulations: www.fgc.ca.gov

Title 14 of the California Code of Regulations can be accessed through The Office of Administrative Law: www.oal.ca.gov

The U.S. Fish and Wildlife Service is responsible for protecting Endangered and Threatened species, and conserving candidate species and at-risk species so that ESA listing is not necessary: www.fws.gov/Endangered

NOAA’s National Marine Fisheries Service, Office of Protected Resources is responsible for protecting marine mammals and Endangered and Threatened marine life: www.fisheries.noaa.gov/about/office-protected-resources

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Taxon	Common Name	State Status	State List Date	Federal Status	Federal List Date	Notes
INVERTEBRATES						
GASTROPODA	Snails, slugs, & abalone					
<i>Haliotis cracherodii</i>	Black abalone			FE	20110413 20090213	Listed by NMFS in 2009 and by USFWS in 2011.
<i>Haliotis sorenseni</i>	White abalone			FE	20051116 20010628	Listed by NMFS in 2001 and by USFWS in 2005.
<i>Helminthoglypta walkeriana</i>	Morro shoulderband (=banded dune) snail			FE	19950117	The 2006 five year review should be consulted to better understand the status of this species.
<i>Monadenia infumata setosa</i>	Trinity bristle snail	ST	19801002			Listed by the State of California as <i>Monadenia setosa</i> .
CRUSTACEA - ANOSTRACA	Fairy Shrimp					
<i>Branchinecta conservatio</i>	Conservancy fairy shrimp			FE	19940919	
<i>Branchinecta longiantenna</i>	Longhorn fairy shrimp			FE	19940919	
<i>Branchinecta lynchi</i>	Vernal pool fairy shrimp			FT	19940919	
<i>Branchinecta sandiegonensis</i>	San Diego fairy shrimp			FE	19970203	
<i>Streptocephalus woottoni</i>	Riverside fairy shrimp			FE	19930803	
CRUSTACEA - NOTOSTRACA	Tadpole shrimp					
<i>Lepidurus packardii</i>	Vernal pool tadpole shrimp			FE	19940919	
CRUSTACEA - DECAPODA	Crayfish & shrimp					
<i>Pacifastacus fortis</i>	Shasta crayfish	SE ST	19880226 19801002	FE	19880930	
<i>Syncaris pacifica</i>	California freshwater shrimp	SE	19801002	FE	19881031	
INSECTA - ORTHOPTERA	Grasshoppers, katydids, & crickets					
<i>Trimerotropis infantilis</i>	Zayante band-winged grasshopper			FE	19970224	
INSECTA - COLEOPTERA	Beetles					
<i>Cicindela ohlone</i>	Ohlone tiger beetle			FE	20011003	
<i>Desmocerus californicus dimorphus</i>	Valley elderberry longhorn beetle			FT	19800915	
<i>Dinacoma caseyi</i>	Casey's June beetle			FE	20111024	
<i>Elaphrus viridis</i>	Delta green ground beetle			FT	19800915	
<i>Polyphylla barbata</i>	Mount Hermon June beetle			FE	19970224	
INSECTA - LEPIDOPTERA	Butterflies & moths					
<i>Apodemia mormo langei</i>	Lange's metalmark butterfly			FE	19760608	
<i>Callophrys mossii bayensis</i>	San Bruno elfin butterfly			FE	19760608	Synonymous with <i>Incisalia fotis bayensis</i> and <i>Callophrys fotis bayensis</i> .
<i>Euphilotes battoides allyni</i>	El Segundo blue butterfly			FE	19760608	

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<i>Euphilotes enoptes smithi</i>	Smith's blue butterfly			FE	19760608	Synonymous with <i>Philotes enoptes smithi</i> and <i>Shijimiaeoides enoptes smithi</i> .
<i>Euphydryas editha bayensis</i>	Bay checkerspot butterfly			FT	19871019	
<i>Euphydryas editha quino</i>	Quino checkerspot butterfly			FE	19970116	Synonymous with <i>Euphydryas editha wrighti</i>
<i>Euproserpinus euterpe</i>	Kern primrose sphinx moth			FT	19800509	
<i>Glaucopsyche lygdamus palosverdesensis</i>	Palos Verdes blue butterfly			FE	19800801	
<i>Lycaena hermes</i>	Hermes copper butterfly			FC	20110414	
<i>Plebejus icarioides missionensis</i>	Mission blue butterfly			FE	19760608	Synonymous with <i>Icaricia icarioides missionensis</i> .
<i>Plebejus idas lotis</i>	Lotis blue butterfly			FE	19760608	Synonymous with <i>Plebejus anna lotis</i> and <i>Lycaeides argyrognomon lotis</i> .
<i>Pseudocopa eunus obscurus</i>	Carson wandering skipper			FE	20020807	
<i>Pyrgus ruralis lagunae</i>	Laguna Mountains skipper			FE	19970116	
<i>Rhaphiomidas terminatus abdominalis</i>	Delhi Sands flower-loving fly			FE	19930923	
<i>Speyeria callippe callippe</i>	Callippe silverspot butterfly			FE	19971205	
<i>Speyeria zerene behrensii</i>	Behren's silverspot butterfly			FE	19971205	
<i>Speyeria zerene hippolyta</i>	Oregon silverspot butterfly			FT	19801015	
<i>Speyeria zerene myrtleae</i>	Myrtle's silverspot butterfly			FE	19920622	The USFWS and others have not yet determined if the taxonomic expansion by Emmel and Emmel (1998) into <i>S. z. myrtleae</i> and <i>S. z. puntareyes</i> is warranted. <i>Speyeria zerene</i> along the coast of Marin and Sonoma counties are Federally Endangered under the subspecies concept in the 1992 listing.
INSECTA - HYMENOPTERA	Ants, bees, & wasps					
<i>Bombus crotchii</i>	Crotch bumble bee	SC	20190618			
<i>Bombus franklini</i>	Franklin's bumble bee	SC	20190618			
<i>Bombus occidentalis</i>	western bumble bee	SC	20190618			
<i>Bombus suckleyi</i>	Suckley's cuckoo bumble bee	SC	20190618			
FISHES						
ACIPENSERIDAE	Sturgeon					
<i>Acipenser medirostris</i>	Green sturgeon [southern DPS]			FT	20060606	Includes all spawning populations south of the Eel River.
CYPRINIDAE	Minnows & carp					
<i>Gila crassicauda</i>	Thicktail chub	SDE SE	19801002 19740110			Extinct
<i>Gila elegans</i>	Bonytail	SE ST	19740110 19710627	FE	19800523	Federal common name: bonytail chub.
<i>Lavinia exilicauda chi</i>	Clear Lake hitch	ST	20140806			

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<i>Ptychocheilus lucius</i>	Colorado pikeminnow	SE	19710627	FE	19670311	
<i>Siphateles bicolor mohavensis</i>	Mohave tui chub	SE	19710627	FE	19701013	Listed by the State of California as <i>Gila bicolor mohavensis</i> .
<i>Siphateles bicolor snyderi</i>	Owens tui chub	SE	19740110	FE	19850904	Listed by the State of California as <i>Gila bicolor snyderi</i> .
CATOSTOMIDAE	Suckers					
<i>Catostomus microps</i>	Modoc sucker	<u>SE</u> ST	19801002 19740110	<u>FDR</u> FE	20160107 19850711	Recovered
<i>Catostomus santaanae</i>	Santa Ana sucker			FT	20000512	Populations in the Los Angeles, San Gabriel, and Santa Ana River basins.
<i>Chasmistes brevirostris</i>	Shortnose sucker	<u>SE</u> ST	19740110 19710627	FE	19880817	
<i>Deltistes luxatus</i>	Lost River sucker	<u>SE</u> ST	19740110 19710627	FE	19880817	
<i>Xyrauchen texanus</i>	Razorback sucker	<u>SE</u> ST	19740110 19710627	FE	19911122	
OSMERIDAE	Smelt					
<i>Hypomesus transpacificus</i>	Delta smelt	<u>SE</u> ST	20100120 19931209	FT	19930305	20161202 USFWS Annual Notification of Findings indicates uplisting to Federally Endangered (original uplisting petition received 20060308) is "warranted-but-precluded," with a Listing Priority Number of 2.
<i>Spirinchus thaleichthys</i>	Longfin smelt	ST	20090405	FC	20120402	Federal candidacy is only for San Francisco Bay-Delta distinct population segment.
<i>Thaleichthys pacificus</i>	Pacific eulachon [southern DPS]			FT	20110413 20100517	Eulachon was listed as Threatened by NMFS in 2010 and by USFWS in 2011.
SALMONIDAE	Trout & salmon					
<i>Oncorhynchus clarkii henshawi</i>	Lahontan cutthroat trout			<u>FT</u> FE	19750716 19701013	Early Federal Register notices spelled " <i>clarkii</i> " with only one "i"
<i>Oncorhynchus clarkii seleniris</i>	Paiute cutthroat trout			<u>FT</u> FE	19750716 19670311	
<i>Oncorhynchus kisutch</i>	Coho salmon [south of Punta Gorda (Humboldt County), California]	SE	20050330	<u>FE</u> FT	20050829 19961130	The Federal listing is for the Central California Coast Coho ESU and includes populations from Punta Gorda south to, and including, the San Lorenzo River as well as populations in tributaries to San Francisco Bay, excluding the Sacramento-San Joaquin River system. Coho south of San Francisco Bay were state listed in 1995. In February 2004 the Fish and Game Commission determined that coho from San Francisco to Punta Gorda should also be listed as Endangered. This change was finalized by the Office of Administrative Law on 20050330. NMFS completed a comprehensive status review in 2005 reaffirming the status, and uplisting the Central Coast ESU from threatened to endangered. NMFS reaffirmed the FE status again 20140723.

Taxon	Common Name	State Status	State List Date	Federal Status	Federal List Date	Notes
<i>Oncorhynchus kisutch</i>	Coho salmon [from Punta Gorda (Humboldt County), California to the northern border of California]	ST	20050330	FT	19970605	The Federal listing is for the Southern Oregon-Northern California Coast ESU, and includes populations in coastal streams between Cape Blanco, Oregon and Punta Gorda, California. The Fish and Game Commission determined that coho from Punta Gorda to the Oregon border should be listed as Threatened on 20040225. This determination was finalized by the Office of Administrative Law on 20050330. NMFS completed a comprehensive status review 20050829 reaffirming the status.
<i>Oncorhynchus mykiss irideus</i>	Steelhead [Southern California DPS]			FE	19971017	Coastal basins from the Santa Maria River (inclusive), south to the U.S.-Mexico Border. NMFS completed a comprehensive status review 20060206 reaffirming the status.
<i>Oncorhynchus mykiss irideus</i>	Steelhead [South Central California Coast DPS]			FT	19971017	Coastal basins from the Pajaro River (inclusive) south to, but not including, the Santa Maria River. NMFS completed a comprehensive status review 20060206 reaffirming the status.
<i>Oncorhynchus mykiss irideus</i>	Steelhead [California Central Valley DPS]			FT	19980518	The Sacramento and San Joaquin Rivers and their tributaries. NMFS completed a comprehensive status review 20060206 reaffirming the status.
<i>Oncorhynchus mykiss irideus</i>	Steelhead [Central California Coast DPS]			FT	19971017	Coastal streams from the Russian River (inclusive) to Aptos Creek (inclusive), and the drainages of San Francisco, San Pablo, and Suisun Bays eastward to Chipps Island at the confluence of the Sacramento and San Joaquin Rivers; and tributary streams to Suisun Marsh including Suisun Creek, Green Valley Creek, and an unnamed tributary to Cordelia Slough (commonly referred to as Red Top Creek), exclusive of the Sacramento-San Joaquin River Basin of the California Central Valley. NMFS completed a comprehensive status review 20060206 reaffirming the status.
<i>Oncorhynchus mykiss irideus</i>	Steelhead [Northern California DPS]			FT	20000807	Naturally spawned populations residing below impassable barriers in coastal basins from Redwood Creek in Humboldt County to, and including, the Gualala River in Mendocino County. NMFS completed a comprehensive status review 20060206 reaffirming the status.

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<i>Oncorhynchus mykiss irideus</i>	Steelhead [summer-run]	SC	20190618			CNDDDB-tracked taxa includes northern California coastal streams south to Middle Fork Eel River, within range of Klamath Mountains Province DPS and Northern California DPS. Proposed CESA listing status applies only to Northern California DPS summer-run steelhead.
<i>Oncorhynchus mykiss whitei</i>	Little Kern golden trout			FT	19780515	Originally listed as <i>Salmo aguabonita whitei</i> . The genus <i>Salmo</i> was reclassified as <i>Oncorhynchus</i> changing the name to <i>Oncorhynchus aguabonita whitei</i> . However, recent studies indicate this is a subspecies of rainbow trout, therefore <i>Oncorhynchus mykiss whitei</i> .
<i>Oncorhynchus tshawytscha</i>	Chinook salmon [winter run]	SE	19890922	FE FT	19940323 19901130	The federal designation is for the Sacramento River winter-run ESU, and described as winter-run populations in the Sacramento River and its tributaries in California. NMFS completed a comprehensive status review 20050829 reaffirming the status.
<i>Oncorhynchus tshawytscha</i>	Chinook salmon [Upper Klamath-Trinity River Spring ESU]	SC	20190212			Spring-run Chinook salmon in the Trinity River and the Klamath River upstream of the mouth of the Trinity River.
<i>Oncorhynchus tshawytscha</i>	Chinook salmon [California Coastal ESU]			FT	19991115	Rivers and streams south of the Klamath River to the Russian River. NMFS completed a comprehensive status review 20050829 reaffirming the status.
<i>Oncorhynchus tshawytscha</i>	Chinook salmon [spring-run of the Sacramento River drainage]	ST	19990205	FT	19991115	The State listing is for "Spring-run chinook salmon (<i>Oncorhynchus tshawytscha</i>) of the Sacramento River drainage." The Federal listing is for the Central Valley spring-run ESU, and includes populations of spring-run Chinook salmon in the Sacramento River and its tributaries including the Feather River. NMFS completed a comprehensive status review 20050829 reaffirming the status.
<i>Salvelinus confluentus</i>	Bull trout	SE	19801002	FT	19991201	Considered to be extirpated in California.
CYPRINODONTIDAE	Killifishes					
<i>Cyprinodon macularius</i>	Desert pupfish	SE	19801002	FE	19860430	
<i>Cyprinodon nevadensis calidae</i>	Tecopa pupfish	SDE SE	19870609 19710627	FDE FE	19820216 19701013	Extinct
<i>Cyprinodon radiosus</i>	Owens pupfish	SE	19710627	FE	19670311	
<i>Cyprinodon salinus milleri</i>	Cottonball Marsh pupfish	ST	19740110			
GASTROSTEIDAE	Sticklebacks					
<i>Gasterosteus aculeatus williamsoni</i>	Unarmored threespine stickleback	SE	19710627	FE	19701013	
COTTIDAE	Sculpins					

Taxon	Common Name	State Status	State List Date	Federal Status	Federal List Date	Notes
<i>Cottus asperimus</i>	Rough sculpin	ST	19740110			
GOBIIDAE	Gobies					
<i>Eucyclogobius newberryi</i>	Tidewater goby			FE	19940307	See Federal Register 79(49):14340-14362, 20140313, for down-listing proposed rule.
AMPHIBIANS						
AMBYSTOMATIDAE	Mole salamanders					
<i>Ambystoma californiense</i>	California tiger salamander	ST	20100819	(FE), (FT)		The State listing applies to the species as a whole throughout its range; federal statuses apply to Distinct Population Segments (see below).
<i>Ambystoma californiense</i>	California tiger salamander [Central California DPS]	(ST)		FT	20040903	The 2004 federal Threatened status originally applied to the species throughout its range; subsequent legal action resulted in reclassification of other DPSs to Endangered; the central California DPS remained listed as Threatened.
<i>Ambystoma californiense</i>	California tiger salamander [Santa Barbara County DPS]	(ST)		FE	20000915	In 2004 the California tiger salamander was federally listed as Threatened statewide. The Santa Barbara County and Sonoma County Distinct Vertebrate Population Segments (DPS), formerly listed as Endangered, were reclassified to Threatened. On 20050819 U.S. District court vacated the down-listing of the Sonoma and Santa Barbara populations from Endangered to Threatened. Therefore, the Sonoma & Santa Barbara populations were once again listed as Endangered.
<i>Ambystoma californiense</i>	California tiger salamander [Sonoma County DPS]	(ST)		FE	20030319	In 2004 the California tiger salamander was federally listed as Threatened statewide. The Santa Barbara County and Sonoma County Distinct Vertebrate Population Segments (DPS), formerly listed as Endangered, were reclassified to Threatened. On 20050819 U.S. District court vacated the down-listing of the Sonoma and Santa Barbara populations from Endangered to Threatened. Therefore, the Sonoma & Santa Barbara populations were once again listed as Endangered.
<i>Ambystoma macrodactylum croceum</i>	Santa Cruz long-toed salamander	SE	19710627	FE	19670311	
PLETHODONTIDAE	Lungless salamanders					
<i>Batrachoseps major aridus</i>	Desert slender salamander	SE	19710627	FE	19730604	Listed by the State of California as <i>Batrachoseps aridus</i> and originally listed by the USFWS as <i>B. aridus</i> . USFWS 5-year review refers to <i>B. major aridus</i> .

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<i>Batrachoseps simatus</i>	Kern Canyon slender salamander	ST	19710627			
<i>Batrachoseps stebbinsi</i>	Tehachapi slender salamander	ST	19710627			
<i>Hydromantes shastae</i>	Shasta salamander	ST	19710627			
<i>Hydromantes brunus</i>	Limestone salamander	ST	19710627			
<i>Plethodon asupak</i>	Scott Bar salamander	ST	19710627			As recognized by the FGC, the Scott Bar salamander is currently protected under the CESA as a sub-population of the Siskiyou Mountains salamander (<i>Plethodon stormi</i>) (Calif. Regulatory Notice Register, No. 21-Z, p. 916, 20070525).
<i>Plethodon stormi</i>	Siskiyou Mountains salamander	ST	19710627			The common name is spelled incorrectly in Title 14 of the CCR as "Siskiyou mountain salamander." Was a State Candidate for Delisting on 20050930. No action was taken by the FGC after the CDFW presented a Department report on 20061103; SMS was tabled at the 20070503 FGC meeting, and there was nothing to report regarding the Department's environmental documents at the 20071011 meeting. Therefore, with respect to Fish & Game Code 2075, it is assumed that this is no longer a candidate for delisting.
BUFONIDAE	True toads					
<i>Anaxyrus californicus</i>	Arroyo toad			FE	19950117	At the time of listing, arroyo toad was known as <i>Bufo microscaphus californicus</i> , a subspecies of southwestern toad. In 2001, it was determined to be its own species, <i>Bufo californicus</i> . Since then, many species in the genus <i>Bufo</i> were changed to the genus <i>Anaxyrus</i> , and now arroyo toad is known as <i>Anaxyrus californicus</i> .
<i>Anaxyrus canorus</i>	Yosemite toad			FT	20140630	
<i>Anaxyrus exsul</i>	Black toad	ST	19710627			Listed by the State of California as <i>Bufo exsul</i> .
RANIDAE	True frogs					
<i>Rana boylei</i>	Foothill yellow-legged frog	SC	20170627			Date of FGC vote to advance to candidacy was 20170621.
<i>Rana cascadae</i>	Cascades frog	SC	20171017			Date of FGC vote to advance to candidacy was 20171011.
<i>Rana draytonii</i>	California red-legged frog			FT	19960624	Synonymous with <i>Rana aurora draytonii</i> .

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Taxon	Common Name	State Status	State List Date	Federal Status	Federal List Date	Notes
<i>Rana muscosa</i>	Southern mountain yellow-legged frog	SE	20130401	(FE)		Though the scientific name <i>Rana muscosa</i> is not disputed, the State uses this common name, whereas the USFWS listing refers to two distinct population segments. This species is also known by the common name Sierra Madre yellow-legged frog (Vredenburg et al. 2007).
<i>Rana muscosa</i>	Mountain yellow-legged frog [Southern California DPS]	(SE)		FE	20020801	San Gabriel, San Jacinto, and San Bernardino Mountains only.
<i>Rana muscosa</i>	Mountain yellow-legged frog [Northern California DPS]	(SE)		FE	20140630	North of the Tehachapi Mountains from the Monarch Divide to portions of the Kern River drainage.
<i>Rana pretiosa</i>	Oregon spotted frog			FT	20140929	
<i>Rana sierrae</i>	Sierra Nevada yellow-legged frog	ST	20130401	FE	20140630	
REPTILES						
CHELONIIDAE	Sea turtles					
<i>Caretta caretta</i>	Loggerhead sea turtle [North Pacific DPS]			FE FT	20111024 19780728	The 1978 listing was for the worldwide range of the species. The 20111024 final rule is for the North Pacific DPS (north of the equator & south of 60 degrees north latitude).
<i>Chelonia mydas</i>	Green turtle			FT FT FE	20160506 19780728 19701013	Alternate common name: green sea turtle. Current FT status refers to East Pacific DPS.
<i>Lepidochelys olivacea</i>	Olive (=Pacific) ridley sea turtle			FT	19780728	
DERMOCHELYIDAE	Leatherback turtles					
<i>Dermochelys coriacea</i>	Leatherback sea turtle			FE	19700602	
TESTUDINIDAE	Land tortoises					
<i>Gopherus agassizii</i>	Desert tortoise	ST	19890803	FT	19900402	
GEKKONIDAE	Geckos					
<i>Coleonyx switaki</i>	Barefoot gecko	ST	19801002			Alternate common names: Switak's banded gecko, barefoot banded gecko.
CROTAPHYTIDAE	Collared & leopard lizards					
<i>Gambelia sila</i>	Blunt-nosed leopard lizard	SE	19710627	FE	19670311	Synonymous with <i>Gambelia silus</i> . Originally listed under the ESA as <i>Crotaphytus wislizenii silus</i> .
PHRYNOSOMATIDAE	Spiny lizards					
<i>Uma inornata</i>	Coachella Valley fringe-toed lizard	SE	19801002	FT	19801027	
XANTUSIIDAE	Night lizards					
<i>Xantusia riversiana</i>	Island night lizard			FDR FT	20140501 19770811	Recovered
BOIDAE	Boas					
<i>Charina umbratica</i>	Southern rubber boa	ST	19710627			Synonymous with <i>Charina bottae umbratica</i> .
COLUBRIDAE	Egg-laying snakes					

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<i>Masticophis lateralis euryxanthus</i>	Alameda whipsnake	ST	19710627	FT	19971205	Synonymous with <i>Coluber lateralis euryxanthus</i> .
NATRICIDAE	Live-bearing snakes					
<i>Thamnophis gigas</i>	Giant garter snake	ST	19710627	FT	19931119	Listed by State of California as <i>Thamnophis couchi gigas</i> .
<i>Thamnophis sirtalis tetrataenia</i>	San Francisco garter snake	SE	19710627	FE	19670311	
BIRDS						
ANATIDAE	Ducks, geese, & swans					
<i>Branta hutchinsii leucopareia</i>	Cackling (=Aleutian Canada) goose			<u>FDR</u> FT FE	20010320 19910111 19670311	Recovered. At time of federal listing, known as <i>Branta canadensis leucopareia</i> .
DIOMEDEIDAE	Albatross					
<i>Phoebastria albatrus</i>	Short-tailed albatross			<u>FE</u> FE	20000830 19700602	Synonymous with <i>Diomedea albatrus</i> . Listed as Endangered in one of the original species lists, but "due to an inadvertent oversight" when the 1973 ESA repealed the 1969 Act, short-tailed albatross was effectively delisted. Proposed listing to fix this error in 1980, with final rule in 2000.
PELECANIIDAE	Pelicans					
<i>Pelecanus occidentalis californicus</i>	California brown pelican	<u>SDR</u> SE	20090603 19710627	<u>FDR</u> FE	20091217 19701013	Recovered. Federal nomenclature: Brown pelican (<i>Pelecanus occidentalis</i>).
CATHARTIDAE	New World vultures					
<i>Gymnogyps californianus</i>	California condor	SE	19710627	FE	19670311	
ACCIPITRIDAE	Hawks, kites, harriers, & eagles					
<i>Buteo swainsoni</i>	Swainson's hawk	ST	19830417			
<i>Haliaeetus leucocephalus</i>	Bald eagle	<u>SE</u> (rev) SE	19801002 19710627	<u>FDR</u> FT FE (rev) FE	20070808 19950811 19780316 19670311	The Post-delisting Monitoring Plan will monitor the status of the bald eagle over a 20 year period with sampling events held once every 5 years.
FALCONIDAE	Falcons					
<i>Falco peregrinus anatum</i>	American peregrine falcon	<u>SDR</u> SE	20091104 19710627	<u>FDR</u> FE	19990825 19700602	Recovered
<i>Falco peregrinus tundrius</i>	Arctic peregrine falcon			<u>FDR</u> FT FE	19941005 19840419 19700602	Recovered
RALLIDAE	Rails, coots, & gallinules					
<i>Laterallus jamaicensis coturniculus</i>	California black rail	ST	19710627			
<i>Rallus obsoletus levipes</i>	Light-footed Ridgway's rail	SE	19710627	FE	19701013	Formerly light-footed clapper rail, <i>Rallus longirostris levipes</i>
<i>Rallus obsoletus obsoletus</i>	California Ridgway's rail	SE	19710627	FE	19701013	Formerly California clapper rail, <i>Rallus longirostris obsoletus</i>
<i>Rallus obsoletus yumanensis</i>	Yuma Ridgway's rail	<u>ST</u> SE	19780222 19710627	FE	19670311	Formerly Yuma clapper rail, <i>Rallus longirostris yumanensis</i>
GRUIDAE	Cranes					
<i>Grus canadensis tabida</i>	Greater sandhill crane	ST	19830417			
CHARADRIIDAE	Plovers & relatives					

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<i>Charadrius nivosus nivosus</i>	Western snowy plover			FT	19930405	Synonymous with <i>Charadrius alexandrinus nivosus</i> . Federal status applies only to the Pacific coastal population.
LARIDAE	Gulls & terns					
<i>Sternula antillarum browni</i>	California least tern	SE	19710627	FE	19700602	Listed by the State of California and federal government as <i>Sterna antillarum browni</i> .
ALCIDAE	Auklets, puffins, & relatives					
<i>Brachyramphus marmoratus</i>	Marbled murrelet	SE	19920312	FT	19920928	
<i>Synthliboramphus scrippsi</i>	Scripps's murrelet (=Xantus's murrelet)	ST	20041222			At the time of listing, this species was known as the Xantus's Murrelet (<i>Synthliboramphus hypoleucus</i> , with California breeding populations ascribed to <i>Synthliboramphus hypoleucus subsp. scrippsi</i>).
<i>Synthliboramphus hypoleucus</i>	Guadalupe murrelet (=Xantus's murrelet)	ST	20041222			At the time of listing, this species was known as the Xantus's Murrelet (<i>Synthliboramphus hypoleucus</i> , with breeding populations from Baja California ascribed to <i>Synthliboramphus hypoleucus subsp. hypoleucus</i>).
CUCULIDAE	Cuckoos & relatives					
<i>Coccyzus americanus occidentalis</i>	Western yellow-billed cuckoo	<u>SE</u> ST	19880326 19710627	FT	20141103	Federal listing is for the Western DPS of <i>Coccyzus americanus</i> .
STRIGIDAE	Owls					
<i>Micrathene whitneyi</i>	Elf owl	SE	19801002			
<i>Strix nebulosa</i>	Great gray owl	SE	19801002			
<i>Strix occidentalis caurina</i>	Northern spotted owl	ST	20190318	FT	19900723	
PICIDAE	Woodpeckers					
<i>Colaptes chrysoides</i>	Gilded (=Gilded northern) flicker	SE	19880317			Listed by the State of California as <i>Colaptes auratus chrysoides</i> .
<i>Melanerpes uropygialis</i>	Gila woodpecker	SE	19880317			
TYRANNIDAE	Tyrant flycatchers					
<i>Empidonax traillii</i>	Willow flycatcher	SE	19910102			State listing includes all subspecies.
<i>Empidonax traillii extimus</i>	Southwestern willow flycatcher	(SE)		FE	19950329	
LANIIDAE	Shrikes					
<i>Lanius ludovicianus mearnsi</i>	San Clemente loggerhead shrike			FE	19770912	
VIREONIDAE	Vireos					
<i>Vireo bellii arizonae</i>	Arizona Bell's vireo	SE	19880317			
<i>Vireo bellii pusillus</i>	Least Bell's vireo	SE	19801002	FE	19860602	
HIRUNDINIDAE	Swallows					
<i>Riparia riparia</i>	Bank swallow	ST	19890611			
POLIOPTILIDAE	Gnatcatchers					
<i>Polioptila californica californica</i>	Coastal California gnatcatcher			FT	19930330	
EMBERIZIDAE	Sparrows, buntings, warblers, & relatives					

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Taxon	Common Name	State Status	State List Date	Federal Status	Federal List Date	Notes
<i>Artemisospiza belli clementeae</i>	San Clemente sage sparrow			FT	19770912	Federal nomenclature at time of listing: <i>Amphispiza belli clementeae</i> .
<i>Melospiza melodia graminea</i>	Santa Barbara song sparrow			FDE FE	19831012 19730604	Extinct. This status refers specifically to the Santa Barbara song sparrow, which was later reclassified as a subspecies (Channel Islands song sparrow) with the same scientific name, but which also combined two additional groups formerly classified as their own subspecies.
<i>Melospiza crissalis eremophilus</i>	Inyo California towhee	SE	19801002	FPD FT	20131104 19870902	Listed by the State of California and federal government as <i>Pipilo crissalis eremophilus</i> .
<i>Passerculus sandwichensis beldingi</i>	Belding's savannah sparrow	SE	19740110			Listed by the State of California as <i>Passerculus sandwichensis beldingi</i>
ICTERIDAE	Blackbirds					
<i>Agelaius tricolor</i>	Tricolored blackbird	ST	20190318			
MAMMALS						
SORICIDAE	Shrews					
<i>Sorex ornatus relictus</i>	Buena Vista Lake ornate shrew			FE	20020405	
PHYLLOSTOMIDAE	Leaf-nosed bats					
<i>Leptonycteris yerbabuenae</i>	Lesser long-nosed bat			FDR FE	20180518 19881031	Recovered.
LEPORIDAE	Rabbits & hares					
<i>Sylvilagus bachmani riparius</i>	Riparian brush rabbit	SE	19940529	FE	20000324	
APLODONTIDAE	Mountain beavers					
<i>Aplodontia rufa nigra</i>	Point Arena mountain beaver			FE	19911212	
SCIURIDAE	Squirrels & relatives					
<i>Ammospermophilus nelsoni</i>	Nelson's (=San Joaquin) antelope squirrel	ST	19801002			
<i>Xerospermophilus mohavensis</i>	Mohave ground squirrel	ST	19710627			Listed by the State of California as <i>Spermophilus mohavensis</i> .
HETEROMYIDAE	Kangaroo rats, pocket mice, & kangaroo mice					
<i>Dipodomys heermanni morroensis</i>	Morro Bay kangaroo rat	SE	19710627	FE	19701013	
<i>Dipodomys ingens</i>	Giant kangaroo rat	SE	19801002	FE	19870105	
<i>Dipodomys merriami parvus</i>	San Bernardino kangaroo rat			FE	19980924	Federal nomenclature: San Bernardino Merriam's kangaroo rat.
<i>Dipodomys nitratoideus exilis</i>	Fresno kangaroo rat	SE ST	19801002 19710627	FE	19850301	
<i>Dipodomys nitratoideus nitratoideus</i>	Tipton kangaroo rat	SE	19890611	FE	19880808	
<i>Dipodomys stephensi</i>	Stephens' kangaroo rat	ST	19710627	FE	19881031	
<i>Perognathus longimembris pacificus</i>	Pacific pocket mouse			FE	19940926	
MURIDAE	Mice, rats, & voles					

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<i>Microtus californicus scirpensis</i>	Amargosa vole	SE	19801002	FE	19841217	
<i>Neotoma fuscipes riparia</i>	Riparian woodrat			FE	20000324	
<i>Reithrodontomys raviventris</i>	Salt-marsh harvest mouse	SE	19710627	FE	19701013	
CANIDAE	Foxes, wolves, & coyotes					
<i>Canis lupus</i>	Gray wolf	SE	20170101	FPD FE	20130613 19780410	
<i>Urocyon littoralis</i>	Island fox	ST	19710627	(FE)		State listing includes all 6 subspecies on all 6 islands. Federal listing is for only 4 subspecies on 4 islands.
<i>Urocyon littoralis catalinae</i>	Santa Catalina Island Fox	(ST)		FT FE	20160912 20040405	
<i>Urocyon littoralis littoralis</i>	San Miguel Island Fox	(ST)		FDR FE	20160912 20040405	
<i>Urocyon littoralis santacruzae</i>	Santa Cruz Island Fox	(ST)		FDR FE	20160216 20040405	
<i>Urocyon littoralis santarosae</i>	Santa Rosa Island Fox	(ST)		FDR FE	20160216 20040405	
<i>Vulpes macrotis mutica</i>	San Joaquin kit fox	ST	19710627	FE	19670311	
<i>Vulpes vulpes necator</i>	Sierra Nevada red fox	ST	19801002			
MUSTELIDAE	Weasels & relatives					
<i>Enhydra lutris nereis</i>	Southern sea otter			FT	19770114	
<i>Gulo gulo</i>	North American wolverine	ST	19710627	FPT	20130204	Listed by the State of California as <i>Gulo gulo</i> . Federal proposed listing is for the distinct population segment of the North American wolverine (<i>Gulo gulo luscus</i>) occurring in the contiguous U.S. Federal List Date refers to the original date proposed for listing. A USFWS ruling withdrawing the proposed listing on 20140813 was ordered to be revisited under a US District Court Ruling on 20160404.
<i>Martes caurina humboldtensis</i>	Humboldt (=Coastal) marten	SE	20190318			
<i>Pekania [=Martes] pennanti</i>	Pacific fisher [Southern Sierra Nevada ESU]	ST	20190318			California listing is under <i>Martes pennanti</i> and common name Pacific fisher, whereas the USFWS refers to <i>Martes pennanti</i> and common name fisher. Previous USFWS candidacy referred to the West Coast DPS in California, Oregon, and Washington. On 20190318, the Southern Sierra ESU (defined as California south of the Merced River) was officially listed as Threatened under CESA.
OTARIIDAE	Sea lions & fur seals					
<i>Arctocephalus townsendi</i>	Guadalupe fur seal	ST	19710627	FT FE	19860115 19670311	Not currently tracked by CNDDB.

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Taxon	Common Name	State Status	State List Date	Federal Status	Federal List Date	Notes
<i>Eumetopias jubatus</i>	Steller sea lion [Eastern DPS]			<u>FDR</u> FT	20131204 19970604	Recovered. Delisted by NMFS. On 19901204, the Steller sea lion was listed as federally Threatened throughout its entire range. In 1997, NMFS reclassified Steller sea lions into two distinct population segments: the Western DPS (west of 144 degrees longitude) was listed as Endangered; the Eastern DPS (east of 144 degrees longitude) was listed as Threatened, and subsequently delisted in 2013.
BOVIDAE	Sheep & relatives					
<i>Ovis canadensis nelsoni</i>	Peninsular bighorn sheep [Peninsular CA DPS]	ST	19710627	FE	19980318	Listed by the State of California as <i>Ovis canadensis cremnobates</i> . The subspecies <i>O.c. cremnobates</i> has been synonymized with <i>O.c. nelsoni</i> . The desert bighorn sheep in the Peninsular Ranges, the Peninsular bighorn sheep, is now considered to be a Distinct Population Segment of <i>O.c. nelsoni</i> .
<i>Ovis canadensis sierrae</i>	Sierra Nevada (= California) bighorn sheep	<u>SE</u> ST	19990827 19710627	FE	20000103	Listed by the State of California as California bighorn sheep (<i>Ovis canadensis californiana</i>).
CETACEA	Whales & dolphins					
<i>Balaenoptera borealis</i>	Sei whale			FE	19700602	Not currently tracked by CNDDDB.
<i>Balaenoptera musculus</i>	Blue whale			FE	19700602	Not currently tracked by CNDDDB.
<i>Balaenoptera physalus</i>	Fin whale			FE	19700602	Not currently tracked by CNDDDB.
<i>Eubalaena japonica</i>	North Pacific right whale			<u>FE</u> FE	20080407 19700602	Originally listed as part of the northern right whale (<i>Eubalaena glacialis</i>) species concept under the federal ESA. Taxonomy and nomenclature were updated and clarified in the Federal Register Vol. 68, No. 69, 20030410. In 2006, NMFS completed a status review of right whales in the N. Pacific and N. Atlantic Oceans and in 2008, reclassified the previously Endangered northern right whale (<i>Eubalaena</i> spp.) as two separate Endangered species: North Pacific right whale (<i>E. japonica</i>) and North Atlantic right whale (<i>E. glacialis</i>). Not currently tracked by CNDDDB.
<i>Eschrichtius robustus</i>	Gray whale [Eastern North Pacific DPS]			<u>FDR</u> FE	19940616 19700602	Recovered. NMFS delisted the California population (Eastern North Pacific DPS), while keeping the Western North Pacific DPS as Endangered.

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Taxon	Common Name	State Status	State List Date	Federal Status	Federal List Date	Notes
<i>Megaptera novaeangliae</i>	Humpback whale [Central America DPS]			FE FE	20161011 19700602	Also known as Hump-backed whale. 2016 ruling by NMFS established 14 Distinct Population Segments, and revised listing status by DPS. Both the Mexico DPS and Central America DPS feed and travel off the coast of California. Not currently tracked by CNDDDB.
<i>Megaptera novaeangliae</i>	Humpback whale [Mexico DPS]			FT FE	20161011 19700602	Also known as Hump-backed whale. 2016 ruling by NMFS established 14 Distinct Population Segments, and revised listing status by DPS. Both the Mexico DPS and Central America DPS feed and travel off the coast of California. Not currently tracked by CNDDDB.
<i>Orcinus orca</i>	Killer whale [Southern Resident DPS]			FE	20070404 20060216	The Southern Resident DPS of killer whale was listed as Endangered by NMFS on 20060216 and by USFWS on 20070404. Not currently tracked by CNDDDB.
<i>Physeter macrocephalus</i>	Sperm whale			FE	19700602	Federal nomenclature at time of listing: <i>Physeter catodon</i> . Not currently tracked by CNDDDB.

CNDDB County Species List 212 records.

Element Type	Scientific Name	Common Name	Element Code	Federal Status	State Status	CDFW Status	CA Rare Plant Rank	County Name	Data Status	Taxonomic Sort
Animals - Amphibians	Ambystoma californiense	California tiger salamander	AAAAA01180	Threatened	Threatened	WL	-	Lake	Unprocessed	Animals - Amphibians - Ambystomatidae - Ambystoma californiense
Animals - Amphibians	Dicamptodon ensatus	California giant salamander	AAAAH01020	None	None	SSC	-	Lake	Mapped and Unprocessed	Animals - Amphibians - Dicamptodontidae - Dicamptodon ensatus
Animals - Amphibians	Rana boylei	foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	SSC	-	Lake	Mapped and Unprocessed	Animals - Amphibians - Ranidae - Rana boylei
Animals - Amphibians	Rana draytonii	California red-legged frog	AAABH01022	Threatened	None	SSC	-	Lake	Unprocessed	Animals - Amphibians - Ranidae - Rana draytonii
Animals - Amphibians	Taricha rivularis	red-bellied newt	AAAAF02020	None	None	SSC	-	Lake	Mapped	Animals - Amphibians - Salamandridae - Taricha rivularis
Animals - Birds	Accipiter gentilis	northern goshawk	ABNKC12060	None	None	SSC	-	Lake	Mapped and Unprocessed	Animals - Birds - Accipitridae - Accipiter gentilis
Animals - Birds	Aquila chrysaetos	golden eagle	ABNKC22010	None	None	FP, WL	-	Lake	Mapped and Unprocessed	Animals - Birds - Accipitridae - Aquila chrysaetos
Animals - Birds	Circus hudsonius	northern harrier	ABNKC11011	None	None	SSC	-	Lake	Unprocessed	Animals - Birds - Accipitridae - Circus hudsonius
Animals - Birds	Elanus leucurus	white-tailed kite	ABNKC06010	None	None	FP	-	Lake	Unprocessed	Animals - Birds - Accipitridae - Elanus leucurus
Animals - Birds	Haliaeetus leucocephalus	bald eagle	ABNKC10010	Delisted	Endangered	FP	-	Lake	Mapped and Unprocessed	Animals - Birds - Accipitridae - Haliaeetus leucocephalus
Animals - Birds	Branta hutchinsii leucopareia	caekling (=Aleutian Canada) goose	ABNJB05035	Delisted	None	WL	-	Lake	Unprocessed	Animals - Birds - Anatidae - Branta hutchinsii leucopareia
Animals - Birds	Ardea alba	great egret	ABNGA04040	None	None	-	-	Lake	Unprocessed	Animals - Birds - Ardeidae - Ardea alba
Animals - Birds	Ardea herodias	great blue heron	ABNGA04010	None	None	-	-	Lake	Mapped and Unprocessed	Animals - Birds - Ardeidae - Ardea herodias
Animals - Birds	Egretta thula	snowy egret	ABNGA06030	None	None	-	-	Lake	Unprocessed	Animals - Birds - Ardeidae - Egretta thula
Animals - Birds	Nycticorax nycticorax	black-crowned night heron	ABNGA11010	None	None	-	-	Lake	Unprocessed	Animals - Birds - Ardeidae - Nycticorax nycticorax
Animals - Birds	Coccyzus americanus occidentalis	western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	-	-	Lake	Mapped	Animals - Birds - Cuculidae - Coccyzus americanus occidentalis
Animals - Birds	Falco mexicanus	prairie falcon	ABNKD06090	None	None	WL	-	Lake	Mapped and Unprocessed	Animals - Birds - Falconidae - Falco mexicanus
Animals - Birds	Falco peregrinus anatum	American peregrine falcon	ABNKD06071	Delisted	Delisted	FP	-	Lake	Unprocessed	Animals - Birds - Falconidae - Falco peregrinus anatum
Animals - Birds	Progne subis	purple martin	ABPAU01010	None	None	SSC	-	Lake	Mapped and Unprocessed	Animals - Birds - Hirundinidae - Progne subis
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBX00020	None	Threatened	SSC	-	Lake	Mapped	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Pandion haliaetus	osprey	ABNKC01010	None	None	WL	-	Lake	Mapped and Unprocessed	Animals - Birds - Pandionidae - Pandion haliaetus

Animals - Birds	Baeolophus inornatus	oak titmouse	ABPAW01100	None	None	None	-	-	Lake	Unprocessed	Animals - Birds - Paridae - Baeolophus inornatus
Animals - Birds	Setophaga petechia	yellow warbler	ABPBX03010	None	None	SSC	-	-	Lake	Unprocessed	Animals - Birds - Parulidae - Setophaga petechia
Animals - Birds	Artemisiospiza belli belli	Bell's sage sparrow	ABPBX97021	None	None	WL	-	-	Lake	Mapped and Unprocessed	Animals - Birds - Passerellidae - Artemisiospiza belli belli
Animals - Birds	Pelecanus erythrorhynchos	American white pelican	ABNFC01010	None	None	SSC	-	-	Lake	Unprocessed	Animals - Birds - Pelecanidae - Pelecanus erythrorhynchos
Animals - Birds	Phalacrocorax auritus	double-crested cormorant	ABNFD01020	None	None	WL	-	-	Lake	Mapped and Unprocessed	Animals - Birds - Phalacrocoracidae - Phalacrocorax auritus
Animals - Birds	Athene cucularia	burrowing owl	ABNSB10010	None	None	SSC	-	-	Lake	Unprocessed	Animals - Birds - Strigidae - Athene cucularia
Animals - Birds	Strix occidentalis caurina	Northern Spotted Owl	ABNSB12011	Threatened	Threatened	-	-	-	LAKE	Mapped	Animals - Birds - Strigidae - Strix occidentalis caurina
Animals - Crustaceans	Calasellus californicus	An isopod	ICMAL34010	None	None	-	-	-	Lake	Mapped and Unprocessed	Animals - Crustaceans - Asellidae - Calasellus californicus
Animals - Crustaceans	Linderiella occidentalis	California linderiella	ICBRA06010	None	None	-	-	-	Lake	Unprocessed	Animals - Crustaceans - Linderiellidae - Linderiella occidentalis
Animals - Fish	Archoplites interruptus	Sacramento perch	AFCQB07010	None	None	SSC	-	-	Lake	Mapped	Animals - Fish - Centrarchidae - Archoplites interruptus
Animals - Fish	Lavinia exilicauda chi	Clear Lake hitch	AFCJB19011	None	Threatened	-	-	-	Lake	Mapped and Unprocessed	Animals - Fish - Cyprinidae - Lavinia exilicauda chi
Animals - Fish	Lavinia symmetricus ssp. 4	Clear Lake - Russian River roach	AFCJB19029	None	None	SSC	-	-	Lake	Unprocessed	Animals - Fish - Cyprinidae - Lavinia symmetricus ssp. 4
Animals - Fish	Oncorhynchus mykiss irideus pop. 16	steelhead - northern California DPS	AFCOA0209Q	Threatened	Threatened	-	-	-	Lake	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus pop. 16
Animals - Fish	Oncorhynchus mykiss irideus pop. 8	steelhead - central California coast DPS	AFCOA0209G	Threatened	Threatened	-	-	-	Lake	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus pop. 8
Animals - Insects	Andrena blennospermatis	Blennosperma vernal pool andrenid bee	IIHYM35030	None	None	-	-	-	Lake	Mapped	Animals - Insects - Andrenidae - Andrena blennospermatis
Animals - Insects	Bombus caliginosus	obscure bumble bee	IIHYM24380	None	None	-	-	-	Lake	Mapped	Animals - Insects - Apidae - Bombus caliginosus
Animals - Insects	Bombus occidentalis	western bumble bee	IIHYM24250	None	Candidate Endangered	-	-	-	Lake	Mapped and Unprocessed	Animals - Insects - Apidae - Bombus occidentalis
Animals - Insects	Trachykele hartmani	serpentine cypress wood-boring beetle	IIICOLX6010	None	None	-	-	-	Lake	Mapped	Animals - Insects - Buprestidae - Trachykele hartmani
Animals - Insects	Hedychridium milleri	Borax Lake cuckoo wasp	IIHYM68020	None	None	-	-	-	Lake	Mapped	Animals - Insects - Chrysidae - Hedychridium milleri
Animals - Insects	Dubiraphia brunnescens	brownish dubiraphian rifle beetle	IIICOL5A010	None	None	-	-	-	Lake	Mapped and Unprocessed	Animals - Insects - Elmidae - Dubiraphia brunnescens
Animals - Insects	Hydrochara rickseckeri	Ricksecker's water scavenger beetle	IIICOL5V010	None	None	-	-	-	Lake	Mapped	Animals - Insects - Hydrophilidae - Hydrochara rickseckeri
Animals - Insects	Saldula usingeri	Wilbur Springs shorebug	IIHEM07010	None	None	-	-	-	Lake	Mapped	Animals - Insects - Saldidae - Saldula usingeri
Animals - Mammals	Erethizon dorsatum	North American porcupine	AMAFJ01010	None	None	-	-	-	Lake	Mapped and Unprocessed	Animals - Mammals - Erethizontidae - Erethizon dorsatum

Animals - Mammals	Perognathus inornatus	San Joaquin Pocket Mouse	AMAFD01060	None	None	None	-	-	Lake	Mapped and Unprocessed	Animals - Mammals - Heteromyidae - Perognathus inornatus
Animals - Mammals	Eumops perotis californicus	western mastiff bat	AMACD02011	None	None	None	SSC	-	Lake	Unprocessed	Animals - Mammals - Molossidae - Eumops perotis californicus
Animals - Mammals	Arboreomys pomus	Sonoma tree vole	AMAFF23030	None	None	None	SSC	-	Lake	Unprocessed	Animals - Mammals - Muridae - Arboreomys pomus
Animals - Mammals	Gulo gulo	California wolverine	AMAJF03010	Proposed Threatened	Threatened	Threatened	FP	-	Lake	Mapped	Animals - Mammals - Mustelidae - Gulo gulo
Animals - Mammals	Martes caurina humboldtensis	Humboldt marten	AMAJF01012	None	Endangered	Endangered	SSC	-	Lake	Mapped	Animals - Mammals - Mustelidae - Martes caurina humboldtensis
Animals - Mammals	Pekania pennanti	fisher - West Coast DPS	AMAJF01021	None	Threatened	Threatened	SSC	-	Lake	Mapped and Unprocessed	Animals - Mammals - Mustelidae - Pekania pennanti
Animals - Mammals	Taxidea taxus	American badger	AMAJF04010	None	None	None	SSC	-	Lake	Mapped and Unprocessed	Animals - Mammals - Mustelidae - Taxidea taxus
Animals - Mammals	Antrozous pallidus	pallid bat	AMACC10010	None	None	None	SSC	-	Lake	Mapped and Unprocessed	Animals - Mammals - Vespertilionidae - Antrozous pallidus
Animals - Mammals	Corynorhinus townsendii	Townsend's big-eared bat	AMACC08010	None	None	None	SSC	-	Lake	Mapped and Unprocessed	Animals - Mammals - Vespertilionidae - Corynorhinus townsendii
Animals - Mammals	Lasionycteris noctivagans	silver-haired bat	AMACC02010	None	None	None	-	-	Lake	Mapped	Animals - Mammals - Vespertilionidae - Lasionycteris noctivagans
Animals - Mammals	Lasiurus blossevillii	western red bat	AMACC05060	None	None	None	SSC	-	Lake	Mapped and Unprocessed	Animals - Mammals - Vespertilionidae - Lasiurus blossevillii
Animals - Mammals	Lasiurus cinereus	hoary bat	AMACC05030	None	None	None	-	-	Lake	Mapped and Unprocessed	Animals - Mammals - Vespertilionidae - Lasiurus cinereus
Animals - Mammals	Myotis evotis	long-eared myotis	AMACC01070	None	None	None	-	-	Lake	Mapped and Unprocessed	Animals - Mammals - Vespertilionidae - Myotis evotis
Animals - Mammals	Myotis lucifugus	little brown bat	AMACC01010	None	None	None	-	-	Lake	Unprocessed	Animals - Mammals - Vespertilionidae - Myotis lucifugus
Animals - Mammals	Myotis thysanodes	fringed myotis	AMACC01090	None	None	None	-	-	Lake	Mapped and Unprocessed	Animals - Mammals - Vespertilionidae - Myotis thysanodes
Animals - Mammals	Myotis yumanensis	Yuma myotis	AMACC01020	None	None	None	-	-	Lake	Unprocessed	Animals - Mammals - Vespertilionidae - Myotis yumanensis
Animals - Mollusks	Pyrgulopsis ventricosa	Clear Lake pyrg	IMGASJ0F40	None	None	None	-	-	Lake	Mapped	Animals - Mollusks - Hydrobiidae - Pyrgulopsis ventricosa
Animals - Mollusks	Lanx klamathensis	scale lanx	IMGASL7020	None	None	None	-	-	Lake	Unprocessed	Animals - Mollusks - Lymnaeidae - Lanx klamathensis
Animals - Mollusks	Margaritifera falcata	western pearlshell	IMBIV27020	None	None	None	-	-	Lake	Unprocessed	Animals - Mollusks - Margaritiferidae - Margaritifera falcata
Animals - Mollusks	Anodonta oregonensis	Oregon floater	IMBIV04110	None	None	None	-	-	Lake	Unprocessed	Animals - Mollusks - Unionidae - Anodonta oregonensis
Animals - Mollusks	Gonidea angulata	western ridged mussel	IMBIV19010	None	None	None	-	-	Lake	Unprocessed	Animals - Mollusks - Unionidae - Gonidea angulata
Animals - Reptiles	Emys marmorata	western pond turtle	ARAAD02030	None	None	None	SSC	-	Lake	Mapped and Unprocessed	Animals - Reptiles - Emydidae - Emys marmorata
Community - Aquatic	Central Valley Drainage Rainbow Trout/Cyprinid Stream	Central Valley Drainage Rainbow Trout/Cyprinid Stream	CARA2422CA	None	None	None	-	-	Lake	Mapped	Community - Aquatic - Central Valley Drainage Rainbow Trout/Cyprinid Stream

Community - Aquatic	Clear Lake Drainage Cyprinid/Catostomid Stream	Clear Lake Drainage Cyprinid/Catostomid Stream	CARA2530CA	None	None	-	-	Lake	Mapped	Community - Aquatic - Clear Lake Drainage Cyprinid/Catostomid Stream
Community - Aquatic	Clear Lake Drainage Resident Trout Stream	Clear Lake Drainage Resident Trout Stream	CARA2520CA	None	None	-	-	Lake	Mapped	Community - Aquatic - Clear Lake Drainage Resident Trout Stream
Community - Aquatic	Clear Lake Drainage Seasonal Lakefish Spawning Stream	Clear Lake Drainage Seasonal Lakefish Spawning Stream	CARA2550CA	None	None	-	-	Lake	Mapped	Community - Aquatic - Clear Lake Drainage Seasonal Lakefish Spawning Stream
Community - Terrestrial	Coastal and Valley Freshwater Marsh	Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	-	-	Lake	Mapped	Community - Terrestrial - Coastal and Valley Freshwater Marsh
Community - Terrestrial	Great Valley Mixed Riparian Forest	Great Valley Mixed Riparian Forest	CTT61420CA	None	None	-	-	Lake	Mapped	Community - Terrestrial - Great Valley Mixed Riparian Forest
Community - Terrestrial	Northern Basalt Flow Vernal Pool	Northern Basalt Flow Vernal Pool	CTT44131CA	None	None	-	-	Lake	Mapped	Community - Terrestrial - Northern Basalt Flow Vernal Pool
Community - Terrestrial	Northern Interior Cypress Forest	Northern Interior Cypress Forest	CTT83220CA	None	None	-	-	Lake	Mapped	Community - Terrestrial - Northern Interior Cypress Forest
Community - Terrestrial	Northern Vernal Pool	Northern Vernal Pool	CTT44100CA	None	None	-	-	Lake	Mapped	Community - Terrestrial - Northern Vernal Pool
Community - Terrestrial	Northern Volcanic Ash Vernal Pool	Northern Volcanic Ash Vernal Pool	CTT44133CA	None	None	-	-	Lake	Mapped	Community - Terrestrial - Northern Volcanic Ash Vernal Pool
Community - Terrestrial	Serpentine Bunchgrass	Serpentine Bunchgrass	CTT42130CA	None	None	-	-	Lake	Mapped	Community - Terrestrial - Serpentine Bunchgrass
Plants - Bryophytes	Plagiobryoides vinosula	wine-colored tufa moss	NBMUS0Y090	None	None	-	4.2	Lake	Unprocessed	Plants - Bryophytes - Bryaceae - Plagiobryoides vinosula
Plants - Bryophytes	Trichodon cylindricus	cylindrical trichodon	NBMUS7N020	None	None	-	2B.2	Lake	Mapped	Plants - Bryophytes - Ditrichaceae - Trichodon cylindricus
Plants - Bryophytes	Grimmia torenii	Toren's grimmia	NBMUS32330	None	None	-	1B.3	Lake	Mapped	Plants - Bryophytes - Grimmiaceae - Grimmia torenii
Plants - Bryophytes	Mielichhoferia elongata	elongate copper moss	NBMUS4Q022	None	None	-	4.3	Lake	Mapped and Unprocessed	Plants - Bryophytes - Mielichhoferiaceae - Mielichhoferia elongata
Plants - Bryophytes	Didymodon californicus	California beard-moss	NBMUS2C0N0	None	None	-	4.2	Lake	Unprocessed	Plants - Bryophytes - Pottiaceae - Didymodon californicus
Plants - Bryophytes	Tortella alpicola	alpine crisp-moss	NBMUS7K090	None	None	-	2B.3	Lake	Mapped	Plants - Bryophytes - Pottiaceae - Tortella alpicola
Plants - Vascular	Chlorogalum pomeridianum var. minus	dwarf soaproot	PMLJL0G042	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Agavaceae - Chlorogalum pomeridianum var. minus
Plants - Vascular	Allium fimbriatum var. purdyi	Purdy's onion	PMLJL020Y7	None	None	-	4.3	Lake	Unprocessed	Plants - Vascular - Alliaceae - Allium fimbriatum var. purdyi
Plants - Vascular	Eryngium constancei	Loch Lomond button-celery	PDAP10Z0W0	Endangered	Endangered	-	1B.1	Lake	Mapped	Plants - Vascular - Apiaceae - Eryngium constancei
Plants - Vascular	Lomatium hooveri	Hoover's lomatium	PDAP11B2K0	None	None	-	4.3	Lake	Unprocessed	Plants - Vascular - Apiaceae - Lomatium hooveri
Plants - Vascular	Lomatium repostum	Napa lomatium	PDAP11B1M0	None	None	-	4.3	Lake	Unprocessed	Plants - Vascular - Apiaceae - Lomatium repostum
Plants - Vascular	Asclepias solanoana	serpentine milkweed	PDASC021R0	None	None	-	4.2	Lake	Unprocessed	Plants - Vascular - Apocynaceae - Asclepias solanoana
Plants - Vascular	Anisocarpus scabridus	scabrid alpine tarplant	PDASTDU020	None	None	-	1B.3	Lake	Mapped	Plants - Vascular - Asteraceae - Anisocarpus scabridus

Plants - Vascular	Balsamorhiza macrolepis	big-scale balsamroot	PDAST11061	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Asteraceae - Balsamorhiza macrolepis
Plants - Vascular	Calycadenia micrantha	small-flowered calycadenia	PDAST1P0C0	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Asteraceae - Calycadenia micrantha
Plants - Vascular	Centromadia parryi ssp. parryi	pappose tarplant	PDAST4R0P2	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Asteraceae - Centromadia parryi ssp. parryi
Plants - Vascular	Centromadia parryi ssp. rudis	Parry's rough tarplant	PDAST4R0P3	None	None	-	4.2	Lake	Unprocessed	Plants - Vascular - Asteraceae - Centromadia parryi ssp. rudis
Plants - Vascular	Erigeron greenei	Greene's narrow-leaved daisy	PDAST3M5G0	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Asteraceae - Erigeron greenei
Plants - Vascular	Harmonia hallii	Hall's harmonia	PDAST650A0	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Asteraceae - Harmonia hallii
Plants - Vascular	Harmonia nutans	nodding harmonia	PDAST650D0	None	None	-	4.3	Lake	Unprocessed	Plants - Vascular - Asteraceae - Harmonia nutans
Plants - Vascular	Harmonia stebbinsii	Stebbins' harmonia	PDAST650K0	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Asteraceae - Harmonia stebbinsii
Plants - Vascular	Helianthus exilis	serpentine sunflower	PDAST4N1J0	None	None	-	4.2	Lake	Unprocessed	Plants - Vascular - Asteraceae - Helianthus exilis
Plants - Vascular	Hemizonia congesta ssp. calyculata	Mendocino tarplant	PDAST4R063	None	None	-	4.3	Lake	Unprocessed	Plants - Vascular - Asteraceae - Hemizonia congesta ssp. calyculata
Plants - Vascular	Hemizonia congesta ssp. congesta	congested-headed hayfield tarplant	PDAST4R065	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Asteraceae - Hemizonia congesta ssp. congesta
Plants - Vascular	Lasthenia burkei	Burke's goldfields	PDAST5L010	Endangered	Endangered	-	1B.1	Lake	Mapped	Plants - Vascular - Asteraceae - Lasthenia burkei
Plants - Vascular	Layia septentrionalis	Colusa layia	PDAST5N0F0	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Asteraceae - Layia septentrionalis
Plants - Vascular	Micropus amphibolus	Mt. Diablo cottonweed	PDAST6D030	None	None	-	3.2	Lake	Unprocessed	Plants - Vascular - Asteraceae - Micropus amphibolus
Plants - Vascular	Senecio cleavelandii var. cleavelandii	Cleveland's ragwort	PDAST8H0R1	None	None	-	4.3	Lake	Unprocessed	Plants - Vascular - Asteraceae - Senecio cleavelandii var. cleavelandii
Plants - Vascular	Tracyina rostrata	beaked tracyina	PDAST9D010	None	None	-	1B.2	Lake	Mapped and Unprocessed	Plants - Vascular - Asteraceae - Tracyina rostrata
Plants - Vascular	Azolla microphylla	Mexican mosquito fern	PPAZO01030	None	None	-	4.2	Lake	Unprocessed	Plants - Vascular - Azollaceae - Azolla microphylla
Plants - Vascular	Amsinckia lunaris	bent-flowered fiddleneck	PDBOR01070	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Boraginaceae - Amsinckia lunaris
Plants - Vascular	Cryptantha dissita	serpentine cryptantha	PDBOR0A0H2	None	None	-	1B.2	Lake	Mapped and Unprocessed	Plants - Vascular - Boraginaceae - Cryptantha dissita
Plants - Vascular	Hackelia amethystina	amethyst stickseed	PDBOR0G010	None	None	-	4.3	Lake	Unprocessed	Plants - Vascular - Boraginaceae - Hackelia amethystina
Plants - Vascular	Plagiobothrys lithocaryus	Mayacamas popcornflower	PDBOR0V0P0	None	None	-	1A	Lake	Mapped	Plants - Vascular - Boraginaceae - Plagiobothrys lithocaryus
Plants - Vascular	Arabis blepharophylla	coast rockcress	PDBRA06040	None	None	-	4.3	Lake	Unprocessed	Plants - Vascular - Brassicaceae - Arabis blepharophylla
Plants - Vascular	Arabis modesta	modest rockcress	PDBRA06180	None	None	-	4.3	Lake	Unprocessed	Plants - Vascular - Brassicaceae - Arabis modesta

Plants - Vascular	Boechea ultraalsa	Snow Mountain rockcress	PDBRA0140	None	None	-	1B.1	Lake	Mapped	Plants - Vascular - Brassicaceae - Boechea ultraalsa
Plants - Vascular	Streptanthus barbiger	bearded jewelflower	PDBRA2G040	None	None	-	4.2	Lake	Unprocessed	Plants - Vascular - Brassicaceae - Streptanthus barbiger
Plants - Vascular	Streptanthus brachiatus ssp. brachiatus	Socrates Mine jewelflower	PDBRA2G072	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Brassicaceae - Streptanthus brachiatus ssp. brachiatus
Plants - Vascular	Streptanthus brachiatus ssp. hoffmanii	Freed's jewelflower	PDBRA2G071	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Brassicaceae - Streptanthus brachiatus ssp. hoffmanii
Plants - Vascular	Streptanthus glandulosus ssp. hoffmanii	Hoffman's bristly jewelflower	PDBRA2G0J4	None	None	-	1B.3	Lake	Mapped	Plants - Vascular - Brassicaceae - Streptanthus glandulosus ssp. hoffmanii
Plants - Vascular	Streptanthus hesperidis	green jewelflower	PDBRA2G510	None	None	-	1B.2	Lake	Mapped and Unprocessed	Plants - Vascular - Brassicaceae - Streptanthus hesperidis
Plants - Vascular	Streptanthus morrisonii ssp. elatus	Three Peaks jewelflower	PDBRA2G0S1	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Brassicaceae - Streptanthus morrisonii ssp. elatus
Plants - Vascular	Streptanthus morrisonii ssp. kruckebergii	Kruckeberg's jewelflower	PDBRA2G0S4	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Brassicaceae - Streptanthus morrisonii ssp. kruckebergii
Plants - Vascular	Streptanthus vernalis	early jewelflower	PDBRA2G120	None	None	-	1B.2	Lake	Mapped and Unprocessed	Plants - Vascular - Brassicaceae - Streptanthus vernalis
Plants - Vascular	Brasenia schreberi	watershield	PDCAB01010	None	None	-	2B.3	Lake	Mapped	Plants - Vascular - Cabombaceae - Brasenia schreberi
Plants - Vascular	Downingia willamettensis	Cascade downingia	PDCAM060E0	None	None	-	2B.2	Lake	Mapped	Plants - Vascular - Campanulaceae - Downingia willamettensis
Plants - Vascular	Legenere limosa	legenere	PDCAM0C010	None	None	-	1B.1	Lake	Mapped	Plants - Vascular - Campanulaceae - Legenere limosa
Plants - Vascular	Viburnum ellipticum	oval-leaved viburnum	PDCPR07080	None	None	-	2B.3	Lake	Mapped	Plants - Vascular - Caprifoliaceae - Viburnum ellipticum
Plants - Vascular	Calystegia collina ssp. oxyphylla	Mt. Saint Helena morning-glory	PDCON04032	None	None	-	4.2	Lake	Mapped and Unprocessed	Plants - Vascular - Convolvulaceae - Calystegia collina ssp. oxyphylla
Plants - Vascular	Calystegia collina ssp. tridactylosa	three-fingered morning-glory	PDCON04036	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Convolvulaceae - Calystegia collina ssp. tridactylosa
Plants - Vascular	Calystegia collina ssp. venusta	South Coast Range morning-glory	PDCON04034	None	None	-	4.3	Lake	Unprocessed	Plants - Vascular - Convolvulaceae - Calystegia collina ssp. venusta
Plants - Vascular	Cuscuta jepsonii	Jepson's dodder	PDCUS011T0	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Convolvulaceae - Cuscuta jepsonii
Plants - Vascular	Sedella leiocarpa	Lake County stonecrop	PDCRA0F020	Endangered	Endangered	-	1B.1	Lake	Mapped	Plants - Vascular - Crassulaceae - Sedella leiocarpa
Plants - Vascular	Carex comosa	bristly sedge	PMCYP032Y0	None	None	-	2B.1	Lake	Mapped	Plants - Vascular - Cyperaceae - Carex comosa
Plants - Vascular	Carex hystericina	porcupine sedge	PMCYP036D0	None	None	-	2B.1	Lake	Mapped	Plants - Vascular - Cyperaceae - Carex hystericina
Plants - Vascular	Carex klamathensis	Klamath sedge	PMCYP03L70	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Cyperaceae - Carex klamathensis
Plants - Vascular	Carex praticola	northern meadow sedge	PMCYP03B20	None	None	-	2B.2	Lake	Mapped	Plants - Vascular - Cyperaceae - Carex praticola
Plants - Vascular	Arctostaphylos manzanita ssp. elegans	Konocti manzanita	PDERI04271	None	None	-	1B.3	Lake	Mapped and Unprocessed	Plants - Vascular - Ericaceae - Arctostaphylos manzanita ssp. elegans

Plants - Vascular	Arctostaphylos stanfordiana ssp. raichei	Raiche's manzanita	PDERI041G2	None	None	None	-	1B.1	Lake	Mapped	Plants - Vascular - Ericaceae - Arctostaphylos stanfordiana ssp. raichei
Plants - Vascular	Amorpha californica var. napensis	Napa false indigo	PDFAB08012	None	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Fabaceae - Amorpha californica var. napensis
Plants - Vascular	Astragalus breweri	Brewer's milk-vetch	PDFAB0F1J0	None	None	None	-	4.2	Lake	Unprocessed	Plants - Vascular - Fabaceae - Astragalus breweri
Plants - Vascular	Astragalus clevelandii	Cleveland's milk-vetch	PDFAB0F250	None	None	None	-	4.3	Lake	Unprocessed	Plants - Vascular - Fabaceae - Astragalus clevelandii
Plants - Vascular	Astragalus rattanii var. jepsonianus	Jepson's milk-vetch	PDFAB0F7E1	None	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Fabaceae - Astragalus rattanii var. jepsonianus
Plants - Vascular	Lupinus antoninus	Anthony Peak lupine	PDFAB2B0C0	None	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Fabaceae - Lupinus antoninus
Plants - Vascular	Lupinus sericatus	Cobb Mountain lupine	PDFAB2B3J0	None	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Fabaceae - Lupinus sericatus
Plants - Vascular	Trifolium hydrophilum	saline clover	PDFAB400R5	None	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Fabaceae - Trifolium hydrophilum
Plants - Vascular	Monardella viridis	green monardella	PDLAM180Q2	None	None	None	-	4.3	Lake	Unprocessed	Plants - Vascular - Lamiaceae - Monardella viridis
Plants - Vascular	Trichostema ruygii	Napa bluecurtis	PDLAM220H0	None	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Lamiaceae - Trichostema ruygii
Plants - Vascular	Calochortus uniflorus	pink star-tulip	PMLIL0D1F0	None	None	None	-	4.2	Lake	Unprocessed	Plants - Vascular - Liliaceae - Calochortus uniflorus
Plants - Vascular	Erythronium helenae	St. Helena fawn lily	PMLIL0J060	None	None	None	-	4.2	Lake	Unprocessed	Plants - Vascular - Liliaceae - Erythronium helenae
Plants - Vascular	Fritillaria glauca	Siskiyou fritillaria	PMLIL0V090	None	None	None	-	4.2	Lake	Unprocessed	Plants - Vascular - Liliaceae - Fritillaria glauca
Plants - Vascular	Fritillaria pluriflora	adobe-lily	PMLIL0V0F0	None	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Liliaceae - Fritillaria pluriflora
Plants - Vascular	Fritillaria purdyi	Purdy's fritillary	PMLIL0V0H0	None	None	None	-	4.3	Lake	Unprocessed	Plants - Vascular - Liliaceae - Fritillaria purdyi
Plants - Vascular	Limnanthes floccosa ssp. floccosa	woolly meadowfoam	PDLIM02043	None	None	None	-	4.2	Lake	Mapped and Unprocessed	Plants - Vascular - Limnanthaceae - Limnanthes floccosa ssp. floccosa
Plants - Vascular	Hesperolinon adenophyllum	glandular western flax	PDLIN01010	None	None	None	-	1B.2	Lake	Mapped and Unprocessed	Plants - Vascular - Linaceae - Hesperolinon adenophyllum
Plants - Vascular	Hesperolinon bicarpellatum	two-carpellate western flax	PDLIN01020	None	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Linaceae - Hesperolinon bicarpellatum
Plants - Vascular	Hesperolinon didymocarpum	Lake County western flax	PDLIN01070	None	Endangered	None	-	1B.2	Lake	Mapped	Plants - Vascular - Linaceae - Hesperolinon didymocarpum
Plants - Vascular	Hesperolinon drymarioides	drymaria-like western flax	PDLIN01090	None	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Linaceae - Hesperolinon drymarioides
Plants - Vascular	Hesperolinon sharsmithiae	Sharsmith's western flax	PDLIN010E0	None	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Linaceae - Hesperolinon sharsmithiae
Plants - Vascular	Ilamna bakeri	Baker's globe mallow	PDMAL0K010	None	None	None	-	4.2	Lake	Unprocessed	Plants - Vascular - Malvaceae - Ilamna bakeri
Plants - Vascular	Malacothamnus helleri	Heller's bush-mallow	PDMAL0Q0G0	None	None	None	-	3.3	Lake	Unprocessed	Plants - Vascular - Malvaceae - Malacothamnus helleri

Plants - Vascular	Sidalcea hickmanii ssp. pillsburiensis	Lake Pillsbury checkerbloom	PDMAL110A5	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Malvaceae - Sidalcea hickmanii ssp. pillsburiensis
Plants - Vascular	Sidalcea keckii	Keck's checkerbloom	PDMAL110D0	Endangered	None	-	1B.1	Lake	Mapped	Plants - Vascular - Malvaceae - Sidalcea keckii
Plants - Vascular	Sidalcea oregana ssp. hydrophila	marsh checkerbloom	PDMAL110K2	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Malvaceae - Sidalcea oregana ssp. hydrophila
Plants - Vascular	Toxicoscordion fontanum	marsh zigadenus	PMLIL28050	None	None	-	4.2	Lake	Unprocessed	Plants - Vascular - Melanthiaceae - Toxicoscordion fontanum
Plants - Vascular	Calyptridium quadripetalum	four-petaled pussypaws	PDPOR09080	None	None	-	4.3	Lake	Unprocessed	Plants - Vascular - Montiaceae - Calyptridium quadripetalum
Plants - Vascular	Lewisia stebbinsii	Stebbins' lewisia	PDPOR040G0	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Montiaceae - Lewisia stebbinsii
Plants - Vascular	Clarkia gracilis ssp. tracyi	Tracy's clarkia	PDONA050J4	None	None	-	4.2	Lake	Unprocessed	Plants - Vascular - Onagraceae - Clarkia gracilis ssp. tracyi
Plants - Vascular	Epilobium nivium	Snow Mountain willowherb	PDONA060M0	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Onagraceae - Epilobium nivium
Plants - Vascular	Ophioglossum pusillum	northern adder's-tongue	PPOPH020F0	None	None	-	2B.2	Lake	Mapped	Plants - Vascular - Ophioglossaceae - Ophioglossum pusillum
Plants - Vascular	Piperia leptopetala	narrow-petaled rein orchid	PMORC1X100	None	None	-	4.3	Lake	Unprocessed	Plants - Vascular - Orchidaceae - Piperia leptopetala
Plants - Vascular	Piperia michaelii	Michael's rein orchid	PMORC1X110	None	None	-	4.2	Lake	Unprocessed	Plants - Vascular - Orchidaceae - Piperia michaelii
Plants - Vascular	Castilleja rubicundula var. rubicundula	pink creamsacs	PDSCR0D482	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Orobanchaceae - Castilleja rubicundula var. rubicundula
Plants - Vascular	Cordylanthus tenuis ssp. brunneus	serpentine bird's-beak	PDSCR0J0S1	None	None	-	4.3	Lake	Unprocessed	Plants - Vascular - Orobanchaceae - Cordylanthus tenuis ssp. brunneus
Plants - Vascular	Orobanche valida ssp. howellii	Howell's broomrape	PDORO040G1	None	None	-	4.3	Lake	Unprocessed	Plants - Vascular - Orobanchaceae - Orobanche valida ssp. howellii
Plants - Vascular	Erythranthe nudata	bare monkeyflower	PDSCR1B200	None	None	-	4.3	Lake	Unprocessed	Plants - Vascular - Phrymaceae - Erythranthe nudata
Plants - Vascular	Antirrhinum subcordatum	dimorphic snapdragon	PDSCR2S070	None	None	-	4.3	Lake	Mapped	Plants - Vascular - Plantaginaceae - Antirrhinum subcordatum
Plants - Vascular	Antirrhinum virga	twig-like snapdragon	PDSCR2S090	None	None	-	4.3	Lake	Unprocessed	Plants - Vascular - Plantaginaceae - Antirrhinum virga
Plants - Vascular	Gratiola heterosepala	Boggs Lake hedge-hyssop	PDSCR0R060	None	Endangered	-	1B.2	Lake	Mapped and Unprocessed	Plants - Vascular - Plantaginaceae - Gratiola heterosepala
Plants - Vascular	Penstemon newberryi var. sonomensis	Sonoma beardtongue	PDSCR1L483	None	None	-	1B.3	Lake	Mapped	Plants - Vascular - Plantaginaceae - Penstemon newberryi var. sonomensis
Plants - Vascular	Calamagrostis ophitidis	serpentine reed grass	PMPOA170V0	None	None	-	4.3	Lake	Unprocessed	Plants - Vascular - Poaceae - Calamagrostis ophitidis
Plants - Vascular	Imperata brevifolia	California satintail	PMPOA3D020	None	None	-	2B.1	Lake	Mapped	Plants - Vascular - Poaceae - Imperata brevifolia
Plants - Vascular	Orcuttia tenuis	slender Orcutt grass	PMPOA4G050	Threatened	Endangered	-	1B.1	Lake	Mapped	Plants - Vascular - Poaceae - Orcuttia tenuis
Plants - Vascular	Panicum acuminatum var. thermale	Geysers panicum	PMPOA24028	None	Endangered	-	1B.2	Lake	Mapped	Plants - Vascular - Poaceae - Panicum acuminatum var. thermale

Plants - Vascular	Puccinellia simplex	California alkali grass	PMPOA53110	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Poaceae - Puccinellia simplex
Plants - Vascular	Stipa lemmonii var. pubescens	pubescent needle grass	PMPOA5X0F2	None	None	-	3.2	Lake	Unprocessed	Plants - Vascular - Poaceae - Stipa lemmonii var. pubescens
Plants - Vascular	Collomia diversifolia	serpentine collomia	PDPLM02020	None	None	-	4.3	Lake	Unprocessed	Plants - Vascular - Polemoniaceae - Collomia diversifolia
Plants - Vascular	Eriastrum brandegeae	Brandegee's eriastrum	PDPLM03020	None	None	-	1B.1	Lake	Mapped	Plants - Vascular - Polemoniaceae - Eriastrum brandegeae
Plants - Vascular	Eriastrum tracyi	Tracy's eriastrum	PDPLM030C0	None	Rare	-	3.2	Lake	Mapped and Unprocessed	Plants - Vascular - Polemoniaceae - Eriastrum tracyi
Plants - Vascular	Leptosiphon acicularis	bristly leptosiphon	PDPLM09010	None	None	-	4.2	Lake	Unprocessed	Plants - Vascular - Polemoniaceae - Leptosiphon acicularis
Plants - Vascular	Leptosiphon grandiflorus	large-flowered leptosiphon	PDPLM090K0	None	None	-	4.2	Lake	Unprocessed	Plants - Vascular - Polemoniaceae - Leptosiphon grandiflorus
Plants - Vascular	Leptosiphon jepsonii	Jepson's leptosiphon	PDPLM09140	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Polemoniaceae - Leptosiphon jepsonii
Plants - Vascular	Leptosiphon latisectus	broad-lobed leptosiphon	PDPLM09150	None	None	-	4.3	Lake	Unprocessed	Plants - Vascular - Polemoniaceae - Leptosiphon latisectus
Plants - Vascular	Leptosiphon rattanii	Rattan's leptosiphon	PDPLM09110	None	None	-	4.3	Lake	Unprocessed	Plants - Vascular - Polemoniaceae - Leptosiphon rattanii
Plants - Vascular	Navarretia cotulifolia	cotula navarretia	PDPLM0C040	None	None	-	4.2	Lake	Unprocessed	Plants - Vascular - Polemoniaceae - Navarretia cotulifolia
Plants - Vascular	Navarretia jepsonii	Jepson's navarretia	PDPLM0C0D0	None	None	-	4.3	Lake	Unprocessed	Plants - Vascular - Polemoniaceae - Navarretia jepsonii
Plants - Vascular	Navarretia leucocephala ssp. bakeri	Baker's navarretia	PDPLM0C0E1	None	None	-	1B.1	Lake	Mapped and Unprocessed	Plants - Vascular - Polemoniaceae - Navarretia leucocephala ssp. bakeri
Plants - Vascular	Navarretia leucocephala ssp. pauciflora	few-flowered navarretia	PDPLM0C0E4	Endangered	Threatened	-	1B.1	Lake	Mapped	Plants - Vascular - Polemoniaceae - Navarretia leucocephala ssp. pauciflora
Plants - Vascular	Navarretia leucocephala ssp. plieantha	many-flowered navarretia	PDPLM0C0E5	Endangered	Endangered	-	1B.2	Lake	Mapped and Unprocessed	Plants - Vascular - Polemoniaceae - Navarretia leucocephala ssp. plieantha
Plants - Vascular	Navarretia linearifolia ssp. pinnatisecta	pinnate-leaved navarretia	PDPLM04211	None	None	-	4.3	Lake	Unprocessed	Plants - Vascular - Polemoniaceae - Navarretia linearifolia ssp. pinnatisecta
Plants - Vascular	Navarretia myersii ssp. deminuta	small pincushion navarretia	PDPLM0C0X2	None	None	-	1B.1	Lake	Mapped	Plants - Vascular - Polemoniaceae - Navarretia myersii ssp. deminuta
Plants - Vascular	Navarretia paradoxinota	Porter's navarretia	PDPLM0C160	None	None	-	1B.3	Lake	Mapped	Plants - Vascular - Polemoniaceae - Navarretia paradoxinota
Plants - Vascular	Eriogonum nervulosum	Snow Mountain buckwheat	PDPGN08440	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Polygonaceae - Eriogonum nervulosum
Plants - Vascular	Eriogonum tripodum	tripod buckwheat	PDPGN085Y0	None	None	-	4.2	Lake	Unprocessed	Plants - Vascular - Polygonaceae - Eriogonum tripodum
Plants - Vascular	Potamogeton zosteriformis	eel-grass pondweed	PMPO03160	None	None	-	2B.2	Lake	Mapped	Plants - Vascular - Potamogetonaceae - Potamogeton zosteriformis
Plants - Vascular	Delphinium uliginosum	swamp larkspur	PDRAN0B1V0	None	None	-	4.2	Lake	Unprocessed	Plants - Vascular - Ranunculaceae - Delphinium uliginosum
Plants - Vascular	Myosurus minimus ssp. apus	little mouse-tail	PDRAN0H031	None	None	-	3.1	Lake	Unprocessed	Plants - Vascular - Ranunculaceae - Myosurus minimus ssp. apus

Plants - Vascular	Ranunculus lobbii	Lobb's aquatic buttercup	PDRAN0L1J0	None	None	None	-	4.2	Lake	Unprocessed	Plants - Vascular - Ranunculaceae - Ranunculus lobbii
Plants - Vascular	Ceanothus confusus	Rincon Ridge ceanothus	PDRHA04220	None	None	None	-	1B.1	Lake	Mapped	Plants - Vascular - Rhamnaceae - Ceanothus confusus
Plants - Vascular	Ceanothus divergens	Calistoga ceanothus	PDRHA04240	None	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Rhamnaceae - Ceanothus divergens
Plants - Vascular	Ceanothus sonomensis	Sonoma ceanothus	PDRHA04420	None	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Rhamnaceae - Ceanothus sonomensis
Plants - Vascular	Horkelia bolanderi	Bolander's horkelia	PDR0S0W011	None	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Rosaceae - Horkelia bolanderi
Plants - Vascular	Brodiaea leptandra	narrow-anthered brodiaea	PMLIL0C022	None	None	None	-	1B.2	Lake	Mapped	Plants - Vascular - Themidaceae - Brodiaea leptandra
Plants - Vascular	Brodiaea rosea	Indian Valley brodiaea	PMLIL0C0K3	None	Endangered	-	-	3.1	Lake	Mapped and Unprocessed	Plants - Vascular - Themidaceae - Brodiaea rosea

Avoidance and Protection Measures

The following activities or preventative measures were recommended in the Biological Site Assessment and will be implemented to minimize adverse impacts to fish and wildlife resources

- Implement a noxious weed management program;
- Closely monitor the cannabis cultivation operation and adjacent areas for wildlife presence, especially during rain events. Do not attempt to move or otherwise relocate any wildlife species should they appear on site. Allow all wildlife to return to their habitat without assistance;
- Avoid impacting areas with large gopher activity or ground squirrel dens
- Avoid allowing pesticide to drift into areas beyond the cannabis cultivation operations;
- Maintain installed erosion control measures;
- Maintain well vegetated riparian buffers;
- All food scraps, wrappers, food containers, cans, bottles, and other trash from the project area will be deposited in trash containers with an adequate lid or cover and contain trash. All food waste should be placed in a securely-covered bin and removed from the site on a weekly basis to avoid attracting animals;
- Vehicles and equipment will be parked on existing roads and/or developed areas, or approved work areas. Vehicles will be confined to public roadways and pre-approved access routes (e.g., private paved and unpaved roads, and overland routes), previously disturbed and unvegetated roadsides, and work areas. Access routes and construction work areas will be limited to the minimum access necessary.