

Water Resource Protection Plan
for APN 208-113-008
WDID# 1B170161CHUM
Humboldt County

Submitted to:

*California Regional Water Quality Control Board -
North Coast Region
5550 Skylane Boulevard, Suite A
Santa Rosa, California 95403*

Prepared by:

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October 4, 2017



Site Maps for Parcel

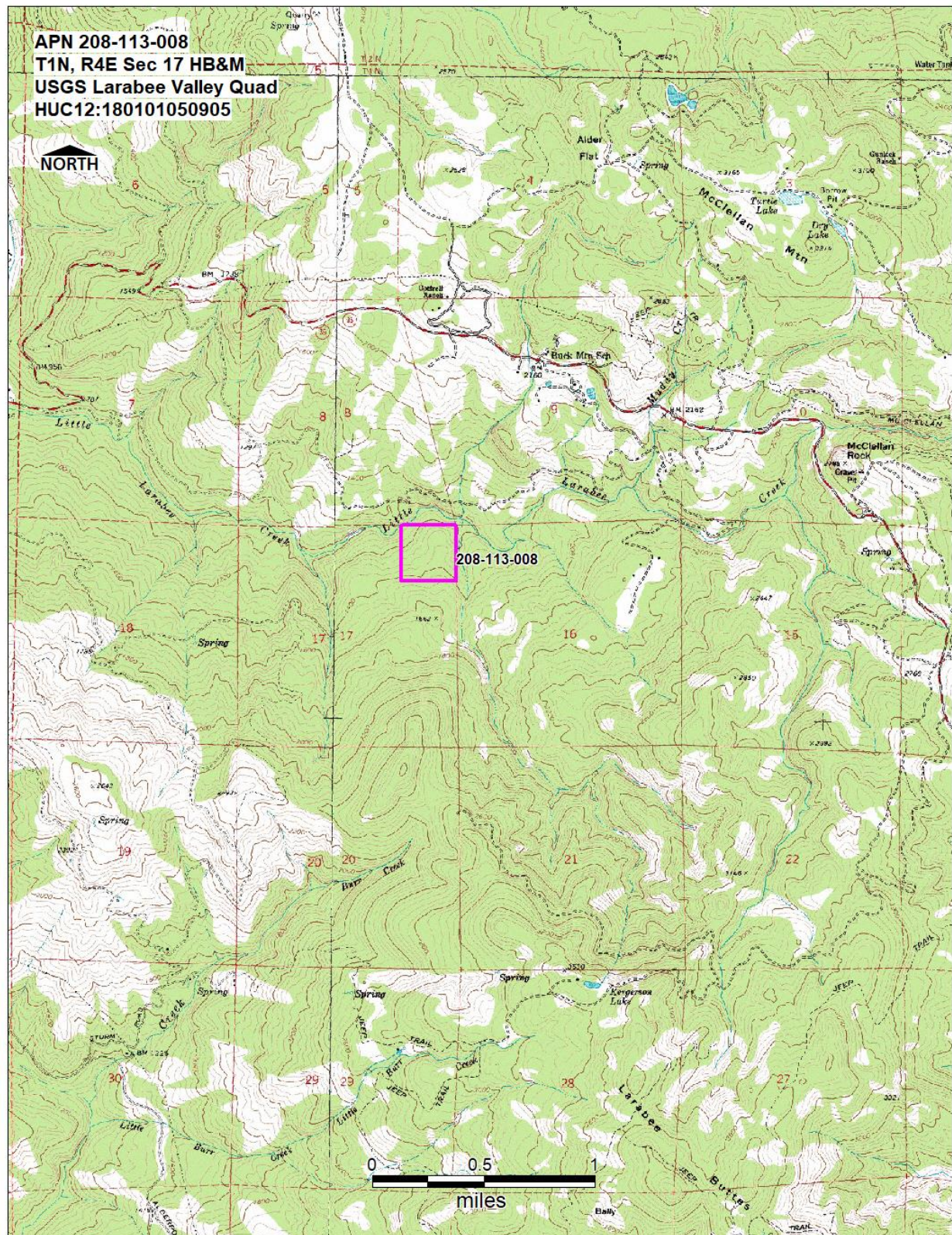


Figure 1. Vicinity map for parcel 208-113-008

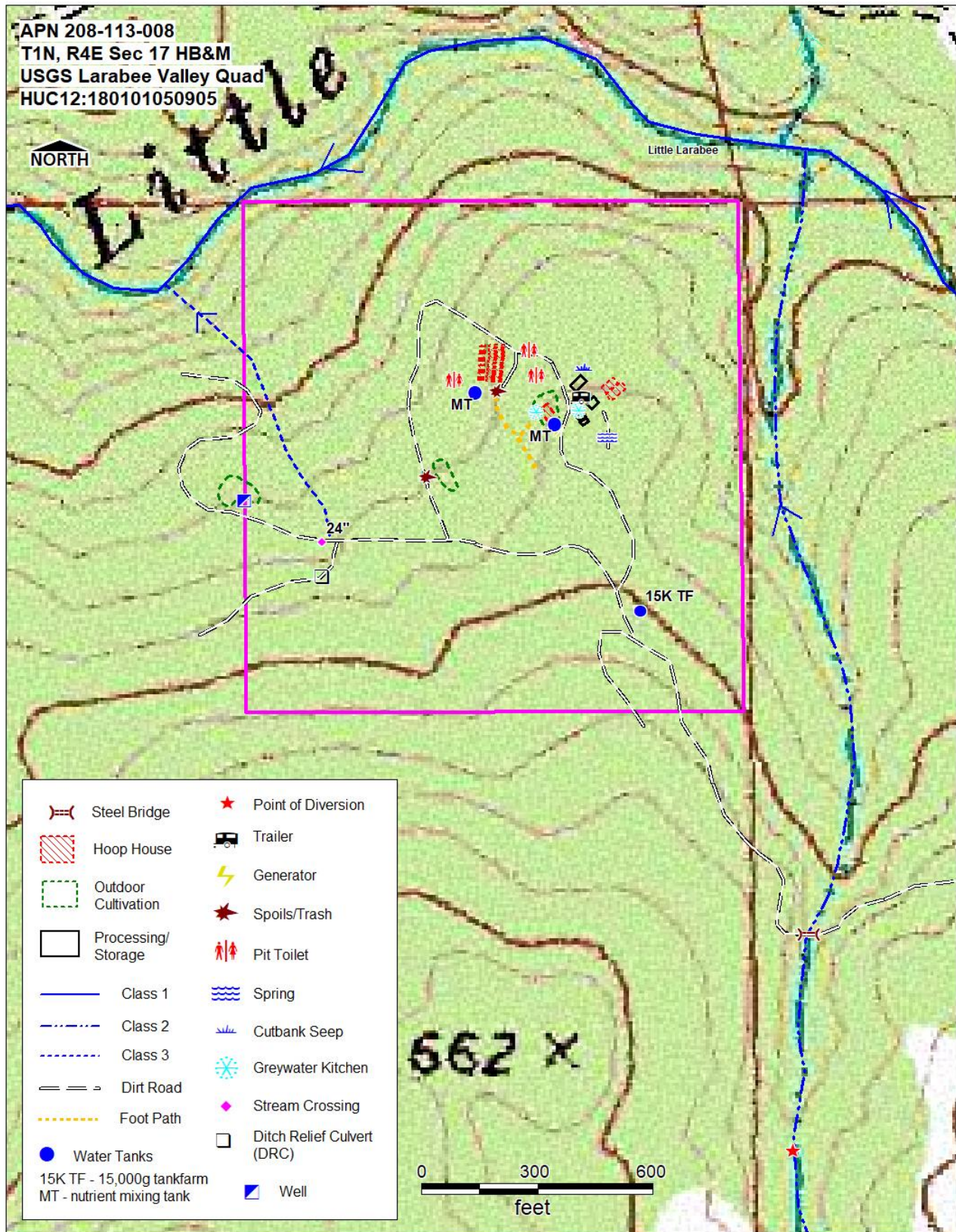


Figure 2. Overview property map for parcel 208-113-008

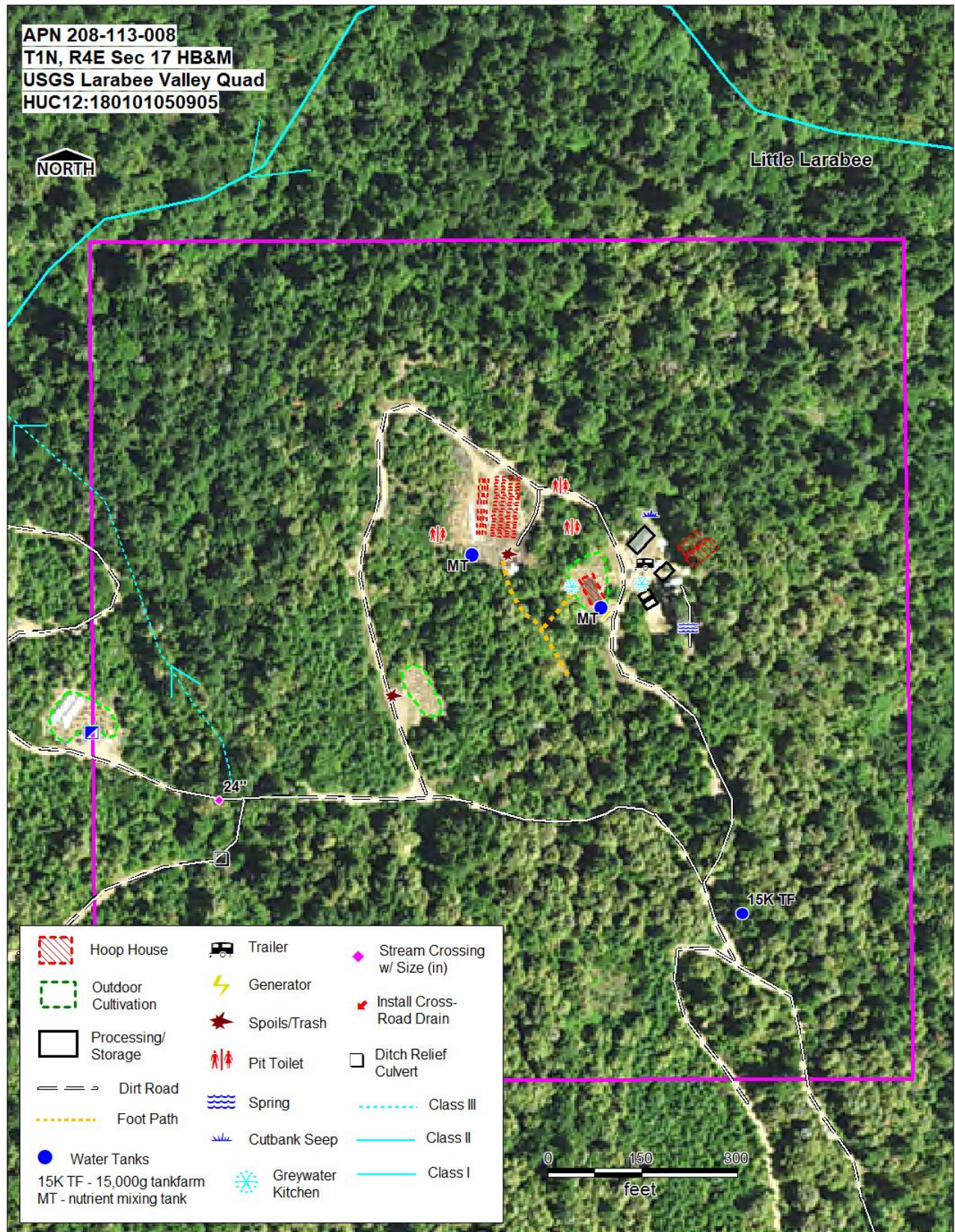


Figure 4. Activity area map for parcel 208-113-008, 2014 NAIP

Water Resource Protection Plan

This document serves as the water resource protection plan (WRPP) for site APN 208-113-008 pursuant to Order No. R1-2015-0023. On August 13, 2015, the North Coast Regional Water Quality Control Board (NCRWQCB; Regional Water Board) adopted a General Waiver of Waste Discharge requirements and General Water Quality Certification for Discharges of Waste Resulting from Cannabis Cultivation and Associated Activities or Operations with Similar Environmental Effects in the North Coast Region, Order No. R1-2015-0023. One of the requirements of Order No. R1-2015-0023 is to prepare a Water Resource Protection Plan (WRPP) for all sites that are enrolled under Tier 2 of the order.

Summary

This 39-acre parcel is in the Little Larabee Creek watershed and lies at approximately 1,500 feet elevation. The parcel is located off of CA-Hwy 36, between mile markers 31.5 and 31.63. The parcel is located to the south of Little Larabee Creek. Little Larabee Creek runs west along the northern property line, an unnamed Class III runs towards the northwest property corner, and an unnamed Class II runs north along the eastern property line. This Class II waterway is the source for domestic and some of the irrigation water used on the parcel. The majority of the water used for irrigation is provided by a well that is located just off property, to the west. The estimated water usage for the 2017 season is 172,800 gallons.

The cultivation area is approximately 16,000 square feet and includes outdoor cultivation and five hoop houses. This operation is classified as Tier 2. Other infrastructure on the parcel is 4 structures for processing/storage, a trailer for residential uses, and 3 outhouses.

The parcel meets most standard conditions for a Tier 2 commercial operation. However, the outhouses need to be replaced by a permitted septic system, there are a few spoils pile to be contained, and if the well is determined to be jurisdictional by CDFW and additional 157,800 gallons of water storage will need to be installed.

Current Conditions

Watercourses

Little Larabee Creek runs west along the northern property line and an unnamed Class 2 runs north along the eastern property line.

The grading of the eastern-most flat exposed some seeps.

Roads

There is approximately 4,000 feet of dirt road on this parcel. Most of the road is in good condition with the proper drainage features.

We are advising that a cross-road drain be installed right before the tank farm and another be installed at the last turn before you reach the eastern activity area.

Watercourse Crossings

There is one watercourse crossing on this property. This 24" culvert is properly sized, but the outlet will need to be armored with rock, as there is a ~2 foot drop from the outlet and it is beginning to undercut slightly. This culvert is feed entirely from road runoff and water from an inboard ditch. Downstream from this culvert is a Class III channel that feeds into Little Larabee Creek approximately 800 feet from the 24" culvert.

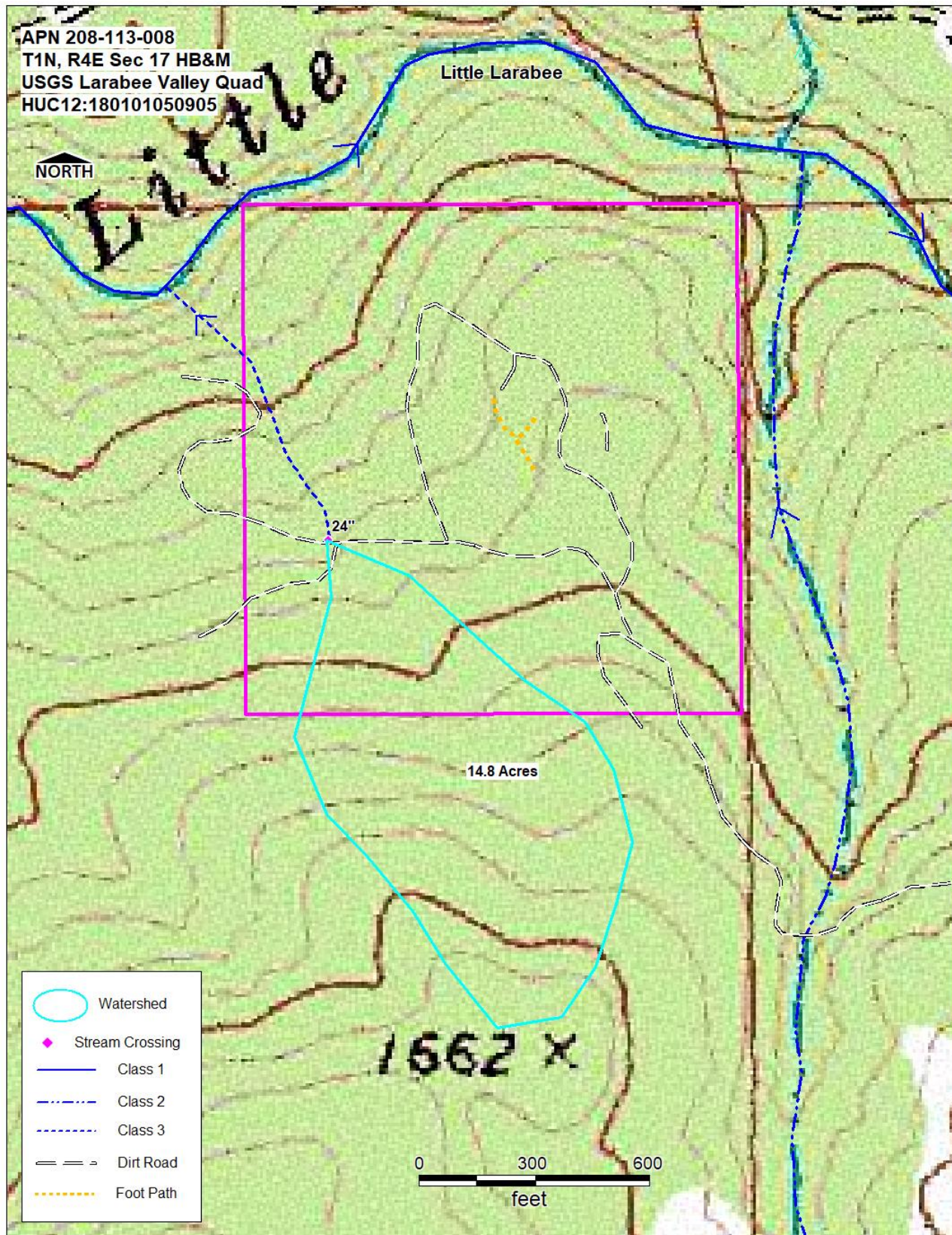


Figure 5. Watershed associated with stream crossing on parcel 208-113-008

Table 1. Existing Culvert Information and Culvert Size Recommendations Based on Culvert Q

<u>ID#</u>	<u>Existing Culvert(D) Diameter (in)</u>	<u>Headwall (HW) Height (in)</u>	<u>HW/D (ratio)</u>	<u>Selected Discharge Method</u>	<u>Q100 (cfs)</u>	<u>Culvert Capacity (cfs)</u>	<u>Is Culvert Undersized?</u>	<u>Recommended Culvert Diam. (in)</u>	<u>Recommendation Based On</u>
24"	24	24	1.0	Rational	10	12		24	Q100

Cultivation Areas

There is a total of approximately 16,000 square feet of cultivation on this property, split up between four gardens.

The first garden (moving east to west) is on graded flat. This garden is currently two hoop houses: 40-feet by 13-feet and 50-feet by 20-feet. There were five more hoop houses on this flat when the landowner bought this parcel in 2016, but a cutbank seep was identified during NRM's initial site visit. The five additional hoop houses and all associated infrastructure was removed in order to comply with the 50-foot buffer.

The second garden is located on a natural landing. There is one 43-foot by 22-foot hoop house surrounded by outdoor plants in smart pots, with a total area of 4,400 square feet.

The third garden is located on a large flat and has 6,000 square feet of outdoor plants and two hoop houses (63-feet by 12-feet and 50-feet by 12-feet).

The fourth garden is on a natural landing and has 2,900 square feet of all outdoor plants.

The cultivation area on the western property line was used by the previous owner. The current landowner is getting a lot-line adjustment, and this garden will no longer be on APN 208-113-008 once it is completed.

For the 2017 cultivation season, all gardens were hand-watered, but the landowner plans on installing a drip irrigation system for next year.

General Property Conditions

This property fails to meet Associated Standard Conditions 1 - 5 and 11.

All amendments and chemicals are stored in a dry and secure shed. All trash and wastes are disposed of at a waste disposal facility and all cannabis stems and root balls are burned or chipped on site.

List of Chemicals Stored Onsite & Information about Use

Soil Amendments:

17lbs/yard soil of SoilScape Solutions "Mothership Mix" (for full season outdoor)

21lbs/yard soil of SoilScape Solutions "Double Dep Mix" (for greenhouse beds)

Mycos - 3 tbsp per plant (~1200 plants)

Neem Seed Meal - 2 tbsp per plant (~1200 plants)

Nutrients:

Plants are fed for flowering, starting August 1. In both August and September the same amount of nutrients are used (detailed below). In October all the plants will be taken down and 60% of the nutrient amounts described below will be used; other than molasses*, which will be used in the same total quantity all 3 months.

Per Month (August, September and 60% for October*)

Fish Hydrostate - 40 cups

Worm Castings - 60 cups

Soluble Kelp Powder - 5 cups

Humisoil - 8 cups

Humic Acid - 6 cups

Fossilized Seabird Guano - 10 cups

Molasses - 20 cups*

Superthrive - 5 oz

Sea Blast - 5 oz

For future compliance, all nutrients, pesticides, herbicides, and fungicides used will be recorded. The product name, amount used and method of application will be recorded each time a product is used. A copy of these records will be kept onsite. Quantities used annually will be reported to the NCRWQCB by March 31st of the following year with the MRP (Appendix C, Monitoring and Reporting Program).

Water Use

For the ~16,000 square feet of cultivation, the landowner estimates a total water usage of 172,800 gallons.

The landowner uses the diversion in the Class 2 waterway during the diversion period to fill up the 15,000 gallons of storage on the property and then during the non-diversion period well water is used for irrigation purposes.

This diversion in the Class 2 is also used year-round as the source for domestic water.

If the well is deemed jurisdictional by CDFW the landowner will need to install an additional 157,800 gallons of storage will need to be installed.

Table 2. Estimated amount of water used for irrigation monthly in gallons

Source	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Well/CI2	0	0	3.2K	8K	16K	24K	32K	32K	32K	25.6K	0	0

For future compliance, **water meters will be used** to quantify water use for irrigation and storage. A photo of the meter reading will be taken weekly when diverting surface water, or monthly if using well to document water use.

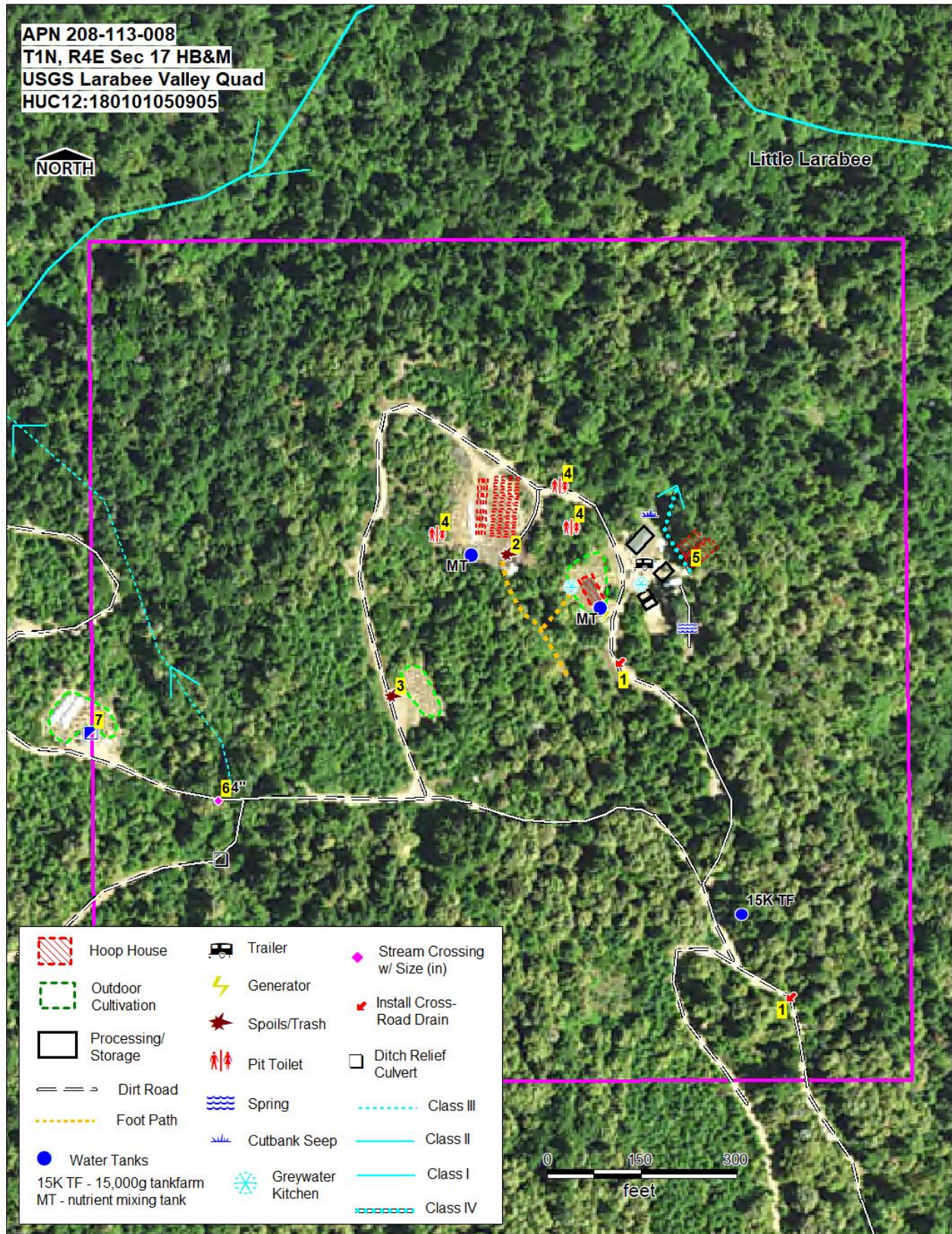


Figure 6. Corrective actions map for parcel 208-113-008

Corrective Actions Please refer to Figure 6, Corrective Actions map

Table 3. Features that need improvement. See Appendix B for Associated Standard Conditions (A.S.C.)

Unique Map Points	Map Point Descriptions	A.S.C	Temporary BMP	Permanent BMP (Best Management Practices)	Priority for Action	Time Schedule for completion of Permanent BMP	Completion Date
1	Install cross-road drain	1b	N/A	Install cross-road drain	3	September 30, 2018	
2	Abandoned trailer/trash	11b, c	N/A	Remove trailer and associated trash from property and dispose at proper facility	1	September 30, 2017	July 30, 2017
3	Old Soil Pile	4b	Tarp pile	Use soil for 2017 season planting	1	September 30, 2017	April 30, 2017
4	Outhouses, pit style	11a	Porta-potties	Remove outhouses and restore area. Install permitted septic system	3	September 30, 2018	
5	Cultivation Flat Drainage	1d, 3b	Remove hoop houses that are w/in the cutbank seep pooling area	Engineer a french-drain system that will allow for proper drainage of the cutbank seeps and prevent the pooling of water	1	October 30, 2017	
6	24" Stream Crossing	2e	N/A	Outlet of culvert needs to be rocked	3	September 30, 2018	
7	Well	5e	N/A	Jurisdiction will be determined by CDFW, may need to install additional water storage	2	May 1, 2018	

Priority time frames: 1 is high priority with treatment being planned to occur immediately; 2 is a high priority for treatment to occur prior to the start of the non-diversion period; 3 is a moderate priority for treatment to occur within a year, or prior to the winter of the second season of operations; 4 is a lower priority with treatment being planned within the shortest time possible, but no later than the expiration of this Order (five years).

- 1) Two cross-road drains to be installed to help prevent future road erosion
- 2) There is an abandoned trailer on the flat where the second cultivation area is located. This trailer and all associated trash will be hauled off-property and disposed of at the property facility.
- 3) On the fourth cultivation area is soil left over from the previous landowner. These spoils will be reused for the 2017 cultivation season
- 4) There are three pit-style outhouses that were built by the previous landowner; theses will be removed, cleaned up, and replaced by a permitted septic system. In the meantime, regularly serviced portable toilets will suffice.

- 5) The flat where the first cultivation area is located was graded and this grading exposed multiple seeps. These seeps have pooled up on the graded flat. The landowner is working with engineers to create a french-drain style drainage to remove the extra water from the flat and to prevent it from pooling up again. The work will be completed during the dry season when all surface water has dried up.
- 6) The 24" stream crossing on the western side of the parcel has an ~3 foot drop from the outlet. To prevent future erosion the outlet will be rocked. A Lake and Streambed Alteration Agreement Permit through CDFW has been applied for this work.
- 7) The landowner used the well along the western property line as the main source of irrigation water. If the well is deemed jurisdictional by CDFW the landowner will need to install an additional 157,800 gallons of storage will need to be installed.

Winter Site Preparation

Prior to winter rains at the end of the growing season the following steps will be taken to prepare the site for winter.

- Soil used in cultivation will be contained properly during winter months and reused the next year
- Any bare soil on the fill slopes of the landings will be covered with straw 2 to 3 inches thick and secured with a tackafier.
- Cannabis stems and root balls will be burned or chipped on site
- All nutrients, fuels, and other chemicals will be placed in a secure storage shed
- All cultivation trash and debris will be properly disposed of at a waste disposal facility. Receipts for disposal will be kept.
- Any vegetation or debris obstructing the inlet or outlet of the culvert(s) will be removed and disposed of where they cannot enter any streams and at least 200 feet from any streams.
- Roads will be checked to make sure that all rolling dips and ditch relief culverts are functioning properly

Monitoring

Corrective Action Monitoring

All corrective actions will be completed by September 30, 2018. Natural Resources Management will conduct a monitoring site visit in April 2018 to check these items. The client will provide photos to NRM as soon as each action is complete.

Annual Monitoring

Fall / Winter Monitoring

Annual monitoring for this site will follow the revised Appendix C from the Order No. 2015-0023. Each year, monitoring will occur on a minimum of three occasions: prior to October 15th; by December 15th; and immediately following a precipitation event with 3 inches of accumulation in a 24hr period.

During each monitoring event, the following items will be inspected:

Monitoring may be done by the landowner/registrant. Photos will be taken at each monitoring point. Monitoring photos and notes will be kept on-site. The landowner/registrant will submit monitoring forms and photos to NRM or the NCRWQCB.

Growing Season Monitoring

During the growing season, the landowner will monitor the following items at least monthly:

- Tanks, bladders, and water lines to ensure there are no leaks
- Cultivation area during or immediately after watering to ensure irrigation water is infiltrating (not running off)
- Cultivation area to ensure that all fertilizers and other chemicals are properly contained in the storage shed and that all trash and debris is properly contained and secured.

The landowner/registrant will keep a record of monitoring completion dates and any necessary corrective actions. A copy of this record will also be submitted to NRM.

During the growing season, all fertilizer and irrigation water use will be tracked. The type and amount of fertilizers used and the monthly total of water used for irrigation will be reported to NRM by December 31st of each year.

The annual monitoring report will be submitted to the Regional Water Board by March 31st of each year. The report will include the Appendix C reporting form the NCRWQCB Order No. R1-2015-0023.

Water Resource Protection Plan

Name of Legally Responsible Person (LRP)_____

Title for LRP (owner, lease, operator, etc.)_____

Signature:_____ Date:_____

WRPP prepared by: **Natural Resources Management Corp. (NRM)**

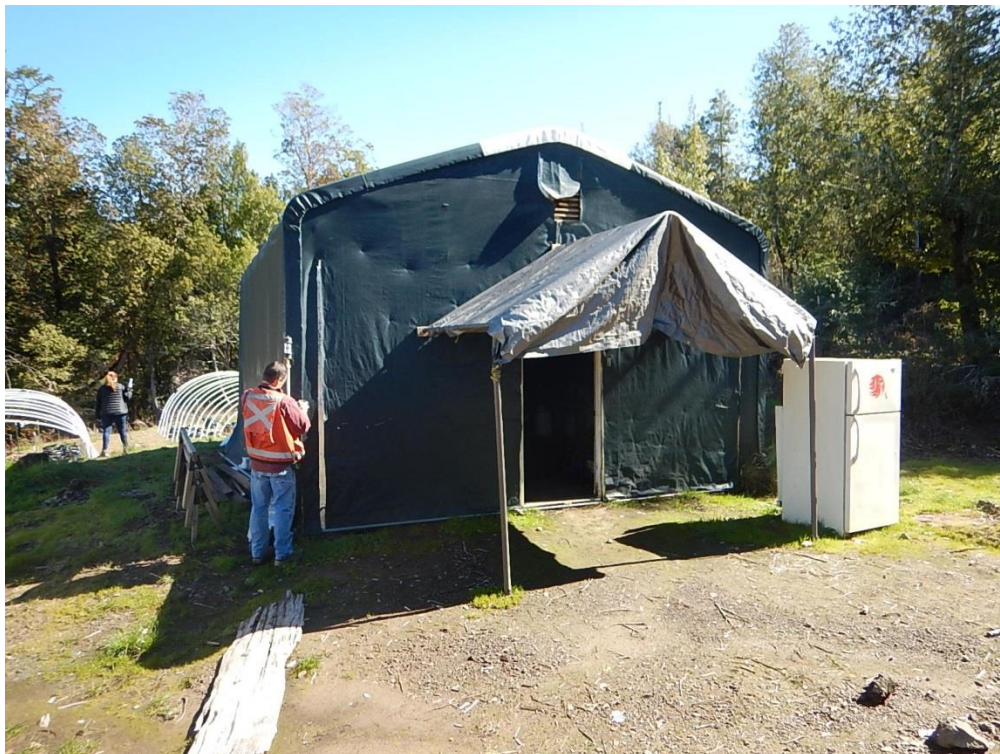
Date:_____

NRM Signature:_____

Appendix A. Photo Documentation



Picture 1. Shed used for fuel and nutrient storage (3/2/2017)



Picture 2. Shed used for processing (3/2/2017)



Picture 3. Cultivation area #2 (3/2/2017)



Picture 4. Cultivation area #3 (3/2/2017)



Picture 5. Cultivation area #4 (3/2/2017)



Picture 6. Culvert outlet that needs rocking (3/2/2017)



Picture 7. Cultivation area #1 – hoop houses have since been removed (3/2/2017)



Picture 8. Poor drainage on flat (3/2/2017)



Picture 9. Seeping cut bank and poor flat drainage (3/2/2017)



Picture 10. Water running down road south of 'cutbank seep' flat



Picture 11. Water from road to south, settling on 'cutbank seep' flat

Appendix B. Associated Standard Conditions

I. As described in the Order, dischargers will fall within one of three tiers.

Discharger shall be in the tier that covers the most impactful part of the operations (i.e., different sections of a property cannot be divided among the tiers). **All dischargers**, regardless of Tier are subject to the standard conditions in section **I.A**, MRP section I.D., and General Terms, Provisions and Prohibitions. **Tier 2 Dischargers** are also subject to section **I.B. (a Water Resources Protection Plan)**, and Tier 3 Dischargers are subject to sections I.A., I.B. (if cultivating cannabis), and I.C.

A. Standard Conditions, Applicable to All Dischargers

1. Site maintenance, erosion control and drainage features

- a. Roads shall be maintained as appropriate (with adequate surfacing and drainage features) to avoid developing surface ruts, gullies, or surface erosion that results in sediment delivery to surface waters.
- b. Roads, driveways, trails, and other defined corridors for foot or vehicle traffic of any kind shall have adequate ditch relief drains or rolling dips and/or other measures to prevent or minimize erosion along the flow paths and at their respective outlets.
- c. Roads and other features shall be maintained so that surface runoff drains away from potentially unstable slopes or earthen fills. Where road runoff cannot be drained away from an unstable feature, an engineered structure or system shall be installed to ensure that surface flows will not cause slope failure.
- d. Roads, clearings, fill prisms, and terraced areas (cleared/developed areas with the potential for sediment erosion and transport) shall be maintained so that they are hydrologically disconnected, as feasible, from surface waters, including wetlands, ephemeral, intermittent and perennial streams. Connected roads are road segments that deliver road surface runoff, via the ditch or road surface, to a stream crossing or to a connected drain that occurs within the high delivery potential portion of the active road network. A connected drain is defined as any cross-drain culvert, water bar, rolling dip, or ditch-out that appears to deliver runoff to a defined channel. A drain is considered connected if there is evidence of surface flow connection from the road to a defined channel or if the outlet has eroded a channel that extends from the road to a defined channel (http://www.forestsandfish.com/documents/Road_Mgmt_Survey.pdf).
- e. Ditch relief drains, rolling dip outlets, and road pad or terrace surfaces shall be maintained to promote infiltration/dispersal of outflows and have no apparent erosion or evidence of soil transport to receiving waters.
- f. Stockpiled construction materials are stored in a location and manner so as to prevent their transport to receiving waters.

2. Stream Crossing Maintenance

- a. Culverts and stream crossings shall be sized to pass the expected 100- year peak streamflow.

- b. Culverts and stream crossings shall be designed and maintained to address debris associated with the expected 100-year peak streamflow.
- c. Culverts and stream crossings shall allow passage of all life stages of fish on fish-bearing or restorable streams, and allow passage of aquatic organisms on perennial or intermittent streams.
- d. Stream crossings shall be maintained so as to prevent or minimize erosion from exposed surfaces adjacent to, and in the channel and on the banks.
- e. Culverts shall align with the stream grade and natural stream channel at the inlet and outlet where feasible. At a minimum, the culvert shall be aligned at the inlet. If infeasible to align the culvert outlet with the stream grade or channel, outlet armoring or equivalently effective means may be applied.
- f. Stream crossings shall be maintained so as to prevent stream diversion in the event that the culvert/crossing is plugged, and critical dips shall be employed with all crossing installations where feasible. If infeasible to install a critical dip, an alternative solution may be chosen.

3. Riparian and Wetland Protection and Management

- a. For Tier 1 Dischargers, cultivation areas or associated facilities shall not be located within 200 feet of surface waters. While 200 foot buffers are preferred for Tier 2 sites, at minimum, cultivation areas and associated facilities shall not be located or occur within 100 feet of any Class I or II watercourse or within 50 feet of any Class III watercourse or wetlands. The Regional Water Board or its Executive Officer may apply additional or alternative conditions on enrollment, including site-specific riparian buffers and other BMPs beyond those identified in water resource protection plans to ensure water quality protection. Alternative site-specific riparian buffers that are equally protective of water quality may be necessary to accommodate existing permanent structures or other types of structures that cannot be relocated.
- b. Buffers shall be maintained at natural slope with native vegetation.
- c. Buffers shall be of sufficient width to filter wastes from runoff discharging from production lands and associated facilities to all wetlands, streams, drainage ditches, or other conveyances.
- d. Riparian and wetland areas shall be protected in a manner that maintains their essential functions, including temperature and microclimate control, filtration of sediment and other pollutants, nutrient cycling, woody debris recruitment, groundwater recharge, streambank stabilization, and flood peak attenuation and flood water storage.

4. Spoils Management

- a. Spoils shall not be stored or placed in or where they can enter any surface water. Spoils are waste earthen or organic materials generated through grading or excavation, or waste plant growth media or soil amendments. Spoils include but are not limited to soils, slash, bark, sawdust, potting soils, rock, and fertilizers.
- b. Spoils shall be adequately contained or stabilized to prevent sediment delivery to surface waters.

- c. Spoils generated through development or maintenance of roads, driveways, earthen fill pads, or other cleared or filled areas shall not be sidecast in any location where they can enter or be transported to surface waters.

5. Water Storage and Use

- a. Size and scope of an operation shall be such that the amount of water used shall not adversely impact water quality and/or beneficial uses, including and in consideration with other water use by operations, instream flow requirements and/or needs in the watershed, defined at the scale of a HUC-12 watershed or at a smaller hydrologic watershed as determined necessary by the Regional Water Board Executive Officer.
- b. Water conservation measures shall be implemented. Examples include use of rainwater catchment systems or watering plants with a drip irrigation system rather than with a hose or sprinkler system.
- c. For Tier 2 Dischargers, if possible, develop off-stream storage facilities to minimize surface water diversion during low flow periods.
- d. Water is applied using no more than agronomic rates. “Agronomic rates” is defined as the rates of fertilizer and irrigation water that a plant needs to enhance soil productivity and provide the crop or forage growth with needed nutrients for optimum health and growth, without having any excess water or nutrient percolate beyond the root zone.
- e. Diversion and/or storage of water from a stream should be conducted pursuant to a valid water right and in compliance with reporting requirements under Water Code section 5101.
- f. Water storage features, such as ponds, tanks, and other vessels shall be selected, sited, designed, and maintained so as to insure integrity and to prevent release into waters of the state in the event of a containment failure.

6. Irrigation Runoff

Implementing water conservation measures, irrigating at agronomic rates, applying fertilizers at agronomic rates and applying chemicals according to the label specifications, and maintaining stable soil and growth media should serve to minimize the amount of runoff and the concentration of chemicals in that water.

In the event that irrigation runoff occurs, measures shall be in place to treat/control/contain the runoff to minimize the pollutant loads in the discharge. Irrigation runoff shall be managed so that any entrained constituents, such as fertilizers, fine sediment and suspended organic particles, and other oxygen consuming materials are not discharged to nearby watercourses. Management practices include, but are not limited to, modifications to irrigation systems that reuse tailwater by constructing offstream retention basins, and active (pumping) and or passive (gravity) tailwater recapture/redistribution systems. Care shall be taken to ensure that irrigation tailwater is not discharged towards or impounded over unstable features or landslides.

7. Fertilizers and Soil Amendments

- a. Fertilizers, potting soils, compost, and other soils and soil amendments shall be stored in locations and in a manner in which they cannot enter or be transported into surface waters and such that nutrients or other pollutants cannot be leached into groundwater.
- b. Fertilizers and soil amendments shall be applied and used per packaging instructions and/or at proper agronomic rates (see footnote on previous page).
- c. Cultivation areas shall be maintained so as to prevent nutrients from leaving the site during the growing season and post-harvest.

8. Pesticides/Herbicides

At the present time, there are no pesticides or herbicides registered specifically for use directly on cannabis and the use of pesticides on cannabis plants has not been reviewed for safety, human health effects, or environmental impacts. Under California law, the only pesticide products not illegal to use on cannabis are those that contain an active ingredient that is exempt from residue tolerance requirements and either registered and labeled for a broad enough use to include use on cannabis or exempt from registration requirements as a minimum risk pesticide under FIFRA section 25(b) and California Code of Regulations, title 3, section 6147. For the purpose of compliance with conditions of this Order, any uses of pesticide products shall be consistent with product labelling and any products on the site shall be placed, used, and stored in a manner that ensures that they will not enter or be released into surface or ground waters.

9. Petroleum products and other chemicals

- a. Petroleum products and other liquid chemicals, including but not limited to diesel, biodiesel, gasoline, and oils shall be stored so as to prevent their spillage, discharge, or seepage into receiving waters. Storage tanks and containers must be of suitable material and construction to be compatible with the substance(s) stored and conditions of storage such as pressure and temperature.
- b. Above ground storage tanks and containers shall be provided with a secondary means of containment for the entire capacity of the largest single container and sufficient freeboard to contain precipitation.
- c. Dischargers shall ensure that diked areas are sufficiently impervious to contain discharged chemicals.
- d. Discharger(s) shall implement spill prevention, control, and countermeasures (SPCC) and have appropriate cleanup materials available onsite.
- e. Underground storage tanks 110 gallons and larger shall be registered with the appropriate County Health Department and comply with State and local requirements for leak detection, spill overflow, corrosion protection, and insurance coverage.

10. Cultivation-related wastes

Cultivation-related wastes including, but not limited to, empty soil/soil amendment/fertilizer/pesticide bags and containers, empty plant pots or containers, dead or harvested plant waste, and spent growth medium shall, for as long as they remain on the site, be stored at locations where they will not enter or be blown into surface waters, and in a manner that ensures that residues and pollutants within those materials do not migrate or leach into surface water or groundwaters. Plant waste may also be composted, subject to the same restrictions cited for cultivation-related waste storage.

11. Refuse and human waste

- a. Disposal of domestic sewage shall meet applicable County health standards, local agency management plans and ordinances, and/or the Regional Water Board's Onsite Wastewater Treatment System (OWTS) policy, and shall not represent a threat to surface water or groundwater.
- b. Refuse and garbage shall be stored in a location and manner that prevents its discharge to receiving waters and prevents any leachate or contact water from entering or percolating to receiving waters.
- c. Garbage and refuse shall be disposed of at an appropriate waste disposal location.

12. Remediation/Cleanup/Restoration

Remediation/cleanup/restoration activities may include, but are not limited to, removal of fill from watercourses, stream restoration, riparian vegetation planting and maintenance, soil stabilization, erosion control, upgrading stream crossings, road outslowing and rolling dip installation where safe and suitable, installing ditch relief culverts and overside drains, removing berms, stabilizing unstable areas, reshaping cutbanks, and rocking native-surfaced roads. Restoration and cleanup conditions and provisions generally apply to Tier 3 sites, however owners/operators of Tier 1 or 2 sites may identify or propose water resource improvement or enhancement projects such as stream restoration or riparian planting with native vegetation and, for such projects, these conditions apply similarly.