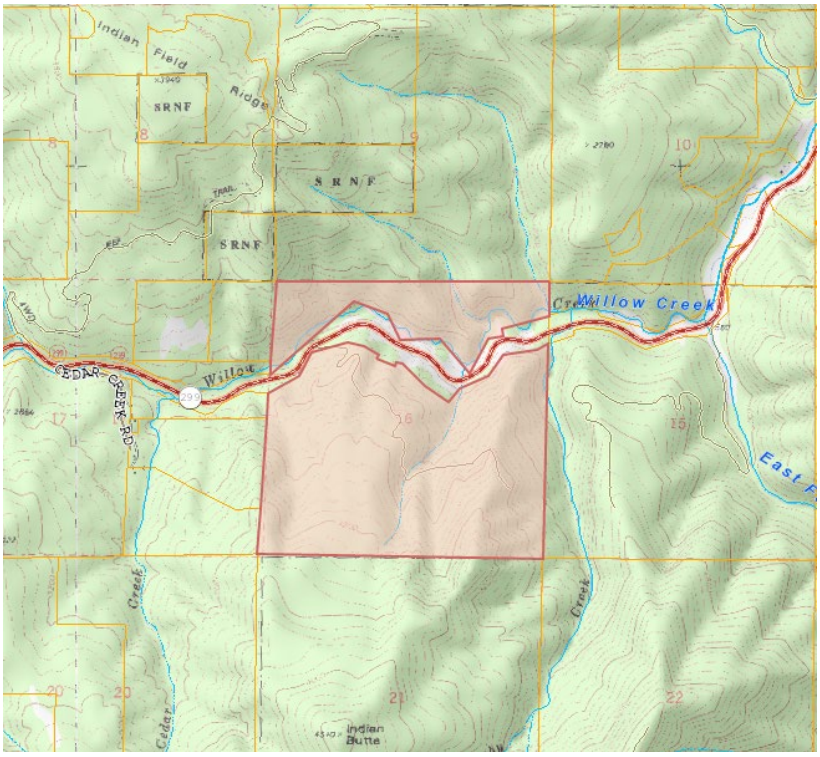
Site Management Plan

WDID: 1B161626CHUM



Prepared for:

State Water Resources Control Board (SWRCB)

North Coast Regional Water Quality Control Board (NCRWQCB)

Prepared by:

Green Road Consulting
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(707) 630-5041

Date of completion:

7/17/2019

General Site Information

Discharger: Ghost Ship, LLC

Landowner: R & F Investment Properties, LLC

Site Address: 33818 Highway 299 Willow Creek, CA 95573

Mailing Address: 1650 Central Ave. Suite C Mckinleyville, CA 95519

Parcel Number: 316-071-004

General Plan Designation: T

Zone: TPZ

Parcel Size: 562.10 GIS Acres

HUC12 Watershed: 180102111201

Disturbed Area: 91,220 ft^2

Cultivation Area: 40,700 ft^2

Tier Level: 2

Risk Level: Moderate

Abbreviations

CA	**Cultivation Area**
CPP	**Corrugated Plastic Pipe**
CMP	**Corrugated Metal Pipe**
CDFW	**California Department of Fish and Wildlife**
DRC	**Ditch Relief Culvert**
GRC	**Green Road Consulting**
IBD	**In-board Ditch**
NCRWQCB	**North Coast Regional Water Quality Control Board**
PWA	**Pacific Watershed Associates**
SWRCB	**State Water Resources Control Board**
STX	**Stream Crossing**

Table of Contents

1. Introduction

This document was prepared by Green Road Consulting (GRC) for Ghost Ship, LLC; parcel number 316-071-004 as required by the SWRCB Order WQ 2017-0023-DWQ[1]. The purpose of the order is to provide a regulatory structure for cannabis cultivation that reduces contributions to existing water quality issues and prevents additional adverse impacts to water resources throughout California. The purpose of the Site Management Plan is to identify conditions present on a parcel that may pose a threat to water quality and resources and establish a plan to meet or surpass requirements set forth in the order.

Green Road Consulting (GRC) has made an initial assessment of this parcel through field work as well as through a variety of county, state, and private websites (e.g. USDA web soil survey, USGS stream stats program, Google Earth, Humboldt County Web GIS). The parcel boundaries are approximate and obtained from Humboldt County. Property lines on maps created by GRC may be shifted to match property line and corners located in the field. The site was surveyed with a GPS unit (2 to 4-meter accuracy) to document roads, buildings, cultivation sites, watercourses, and areas requiring remediation. Maps were created using the software ESRI ArcMap.

2. Site Characteristics

2.1. General

The site is in Northeastern Humboldt County, approximately 12-miles West of the town of Willow Creek and can be accessed from California State Highway 299. The elevation of the site is approximately 2,600 feet above sea level. The parcel is located in steep mountainous terrain with unnamed drainages that flow North into Willow Creek. Willow Creek is tributary to the Trinity River which is on the USEPA's Section 303(d) list for impairment or threat of impairment to water quality associated with elevated sediment and temperature levels. The Trinity River Watershed is known to have Coho and Chinook Salmon as well as Steelhead trout which are designated as a Federally and State threatened species. Slopes on the site range from 10% to 50%. The hillslopes in the region are known to have high to moderate instability. The site geology consists of Quaternary and Jurassic metamorphic and ultramafic rocks with a small area of granitic rocks. The region was historically logged with legacy logging roads and landings throughout the site.

2.2. Site Overview

Structures on the 562-acre property include several small storage sheds, a cabin, a multi-use building, cultivation, water storage and a permitted groundwater well. Water for cultivation and domestic uses is drawn from the well and water for cannabis is monitored with a digital measuring device. The operation is powered by solar paneling and a diesel generator.

Cultivation on the site takes place in several locations and totals ~40,700 square feet. Cultivation areas are delineated on the Site Map **(CA).** The site had approximately 90,220 square feet of disturbed area with some portions within riparian setbacks **(MP4, MP8 and MP13).** Portions within riparian setbacks are linked to historical development and plans to restore said areas have been developed and are part of the

[1] Order entitled "STATE WATER RESOURCES CONTROL BOARD ORDER WQ 2017-0023-DWQ GENERAL WASTE DISCHARGE REQUIREMENTS AND WAIVER OF WASTE DISCHARGE REQUIREMENTS FOR DISCHARGES OF WASTE ASSOCIATED WITH CANNABIS CULTIVATION ACTIVITIES"

discharger's Notification of Lake and Streambed Alteration through the California Department of Fish and Wildlife (CDFW). Proper adherence to the erosion and sediment control measures specified in the "Erosion Prevention and Sediment Capture" section of this report will be necessary to ensure that these areas are sufficiently stabilized.

Table 1. Cultivation area overview.

Cultivation Area (CA)	Cultivation Area (ft^2)	Natural Slope (%)	Distance to Water Body (ft)	Water Body Classification
Area 1 (CA1)	13,300	25	100	Class III
Area 2 (CA2)	6,040	18	1,815	Class III
Area 3 (CA3)	6,140	17	1,265	Class II
Area 4 (CA4)	4,470	17	1,280	Class II
Area 5 (CA5)	10,750	32	250	Class III

2.3. Access Roads

There are 7.38-miles of unpaved roads intersecting the property. There are 1.7-miles of permanent roads, 3.5-miles of seasonal access roads, 0.48-miles of skid roads, .45-miles of roads to be decommissioned, and 1.25-miles of PG&E easement roads. The roads are mostly used April-October. The roads are used minimally by workers navigating the site and bringing in supplies. Workers are on the site daily and most supplies are brought in the beginning of the season. Vehicles are parked near the cabin, multi-use building and at cultivation flats. The natural geology of the region is such that a lot of natural rock exists in roadways and stream channels. The access roads are primarily outsloped and are drained via rolling dips and waterbars. Some short sections of road are drained via inboard ditches and ditch relief culverts. Since the previous site visit in 2017, the discharger has completed most recommended road work such as reshaping the roads with the installation of rolling dips and water bars and the conditions of the access roads have significantly improved. Existing issues which still require remediation are as follows: The road segment used to access sites at **MP8** and **MP9** requires decommissioning. The road shall be outsloped and large waterbars shall be installed in locations marked on the Disturbed Area Map. At **MP1** a section of road receives a spring seep flow from a cut bank. Install an inboard ditch (IBD) to capture the seep and keep it from running down the roadway. Reshape the existing rolling dips that were eroded from 2018 winter. At **MP5** a spring seep from the cutslope of a seasonal road above a Class III watercourse is running onto the roadway and creating surface erosion. Install a rocked rolling dip to convey water off the road. At **MP12** clear the inlet and outlet of 12-inch CMP and maintain the IBD. At **MP23** a cut slope spring seep is running down the roadway. Install more rolling dips just below road intersection to divert flow off the access road.

2.4. Stream Crossings

There are seventeen (17) stream crossings located on the parcel. Some of the crossings were installed as part of a PG&E easement to access powerlines on the property. Most of the remaining crossings were installed during historic logging operations in the area. There are several rocked fords and Humboldt Crossings on road sections not used by the discharger. The stream crossings on the unused road sections will be decommissioned if feasible. The stream crossings that are currently being used as part of the operation will be designed to withstand a 100-year storm event. At **MP2 (STX1)** a seasonal road crosses the head of a Class III drainage with a channel width of 6-inches, install a rock ford with 1-3 CY rock. At

MP3 (STX2) a seasonal road crosses the head of a Class III drainage with an existing 18-inch Corrugated Plastic Pipe (CPP). There were no signs of failure and the structure appeared to be sized correctly. Clean the inlet and the outlet of culvert. At **MP4 (STX3)**, a seasonal road crosses a Class II stream with a channel width of 36-inches. The stream is running down the roadway ~ 300-ft before reconnecting back to the natural channel. The road leads to a rock quarry used to rock the road when the property was being logged. Install a rock armored ford with ~10 CY rock. At this location there is also a spring seep coming out of cut bank ~ 50-ft to the northwest of site with a 12-inch Corrugated Metal Pipe (CMP). The spring is flowing onto the roadway. Remove the culvert and a construct rock lined inboard ditch to connect spring flow to drainage at **MP4.** At **MP6 (STX4)** a seasonal road crosses a Class III drainage. The drainage is being diverted into an inboard ditch for ~50-ft. The drainage is being conveyed to **MP7** down a different water course creating minor in-channel erosion from the increased flows. Install a 24-inch minimum CPP culvert with a critical dip to convey flow across the road to the natural channel. At **MP7 (STX5)** a seasonal road with an existing 18-inch Corrugated Plastic Pipe on a Class III drainage. The stream crossing was in good condition. The culvert will be receiving much less flow after **STX4** is installed. Rock the outfall and install a critical dip. At **MP8 (STX6)** an old graded flat opened a series of spring seeps that are currently flowing around the flat and into a Class II stream. The springs flow all year and the existing drainage ditch has no shade or riparian vegetation. Cultivation activities on the flat have been discontinued and cleaned up. The flat will be decommissioned and restored by constructing a new rock lined channel with 2-ft width and a 2:1 side slope will be dug across the south extent of the flat to connect one of the springs directly to the existing Class II stream. Most the existing channel around the backside of the flat will stay in place. Channel banks will be vegetated to shade and prevent an increase in water temperature. When the flat was created, the earth pushed over large logs creating perched fill and unstable fill slopes near the Class II stream. The perched fill will be pulled back to a 2:1 slope with banks stabilized with seed and straw and logs placed at the toe. The spring seep is conveyed under the roadway with an 18-inch CPP. By the culvert outfall the drainage is impeded by a fence and then drains to the Class II in two locations. Remove the culvert, fence and create a rock lined channel to convey the spring flow to the Class II stream. (a Conceptual design has been prepared for this site by Stillwater Sciences). At **MP9 (STX7)** a Class III drainage running down the seasonal road for ~20-ft and creating a gully where it runs off the road. The diverted drainage is eroding the roadway and the fill slope of the road. Decommission the crossing with channel excavation armored with ~1-5 CY rock. Also, the inboard ditch ~30 above **STX7** is capturing a spring seep. Excavate a large waterbar to drain seep across the road. Install large waterbars ~100-ft above crossing as flagged in the field, to hydrologically disconnect the road from the stream system. At **MP10/MP11 (STX8)** a Class III drainage is being conveyed down an IBD ~ 50-ft before crossing the roadway in an 18-inch diameter culvert. Install a 30" diameter pipe to align with the natural upstream drainage. Due to steep upstream channel gradient and abnormal relative geometry/elevations of current inboard ditch and road prism, special care will need to go into installing a culvert inlet and armored connection with upstream channel that will be stable and functional. New culvert will cross two roads just to the east of where they split. Armor inlet and outlet with 10 CY rock each. Downslope from the location of the proposed culvert outflow, excavate a channel in the existing landing area to direct water toward natural swale located on the eastern extent of the landing. Armor new channel with approximately 10 CY rock. At **MP12** clear the inlet and outlet of 12-inch CMP and maintain the IBD. At **MP13 (STX10)** an old graded flat opened a large spring which is being daylighted for ~ 75-ft. The spring channel is over steepened near access road (western slope) and will need the banks to be pulled back to a 2:1 slope. The daylighted spring will be planted to reduce water temperatures and create riparian habitat. The drainage goes under the access road through an existing 18-inch CPP. The culvert is adequately sized but will need the inlet and outlet cleared out of sediment and debris. The existing flat was once used to cultivate cannabis and was in the stream buffer. This flat requires restoration and for the cultivation waste will be removed. The road is used by PG&E and therefore cannot be decommissioned. **MP14 (STX11)** is a very large and old (>30 yrs)

Humboldt crossing located on an old logging road that is no longer used. The crossing conveys a Class II stream and was not actively eroding. Full removal of the crossing and restoration of the channel would cause significant disturbance that is not warranted. We therefore recommended a light touch approach utilizing minor excavation at two locations to ensure that stream and adjacent spring doesn't flow onto the road surface for extended lengths and planting of native species to widen the riparian corridor. **MP15 (STX12)** is a filled crossing on an old logging road that is not used. The crossing is conveying a Class II drainage. The crossing should be pulled, and the channel should be restored. The access to this site is difficult and is not actively eroding and shall not be considered a threat to water quality. Restore if feasible. **MP16 (STX13)** is a filled crossing on an old logging road that is not used. The crossing is conveying a Class II drainage. The crossing should be pulled, and the channel should be restored. The access to this site is difficult and is not actively eroding or a threat to water quality. Restore if feasible. **MP17 (STX14)** is a Humboldt crossing on a Class II stream on an old, overgrown logging road. The stream hasn't restored itself but is not actively eroding or a threat to water quality. The access to this site is difficult and will likely create more water quality problems. Restore if feasible. **MP18 (STX15)** is an old Humboldt crossing on a Class II stream on an old, overgrown logging road. The crossing has naturally restored itself and is not actively eroding or a threat to water quality. There is still one of the logs in the stream bank. The access to this site is difficult and will likely create more water quality problems. Restore if feasible**.** At **MP19 (STX16)** a Class III drainage is flowing into an old graded flat, which was likely the surface rock quarry for the logging road. Excavate and armor small channel around east side of flat and install 24-inch diameter CMP. Store all chemicals and cultivation material outside of the stream buffer (see site overview map) and surface rock the parking area where muddy sections were observed. At **MP20 (STX17)** sediment and fill from seasonal access road plugging up a Class III seasonal drainage. Remove sediment and install a 24-inch ~60-ft long pipe. Install a rolling dip ~150-ft above crossing on road. At **MP21 (STX18)** a Class III drainage crosses main access road adjacent to the gated entrance of the property. A culvert is needed to convey the watercourse across the roadway. This section of road is off the property but improvements at this site are necessary**.**

Table 2. Overview of stream crossing on the property.

Map Point (MP)	Existing Size (inch)	Type	Watercourse Class	Action
MP2	No structure	NA	Class III	Install a rock ford with 1-3 CY rock
MP3	18-inch CPP	Culvert	Class III	Clean inlet and outlet
MP4	No structure	NA	Class II	Install a rock armored ford with ~10 CY rock
MP6	No structure	NA	Class III	Install a 24-inch minimum CPP culvert with a critical dip
MP7	18-inch CPP	Culvert	Class III	Rock the outfall and install a critical dip
MP8	18-inch CPP	Culvert	Class II	Remove the culvert, fence and create a rock lined channel to convey the spring flow to the Class II stream.

Map Point (MP)	Existing Size (inch)	Type	Watercourse Class	Action
MP9	No structure	NA	Class III	Decommission the crossing with channel excavation armored with ~1-5 CY rock.
MP10/MP11	18-inch CPP	Culvert	Class III	Install a 30” diameter pipe to align with the natural upstream drainage.
MP12	12-inch CMP	Culvert	Class III	Clear the inlet and outlet and maintain the IBD
MP13	18-inch	CPP	Spring	Clear the inlet and the outlet
MP14	Unknown	Humboldt Crossing	Class II	No heavy earthwork recommended. Minor excavation at two locations to ensure that stream and adjacent spring doesn’t flow onto the road surface for extended lengths and planting of native species to widen the riparian corridor.
MP15	No structure	Filled	Class II	Remove the crossing, restore the channel
MP16	No structure	Filled	Class II	Remove the crossing, restore the channel
MP17	Unknown	Humboldt Crossing	Class II	Access to site difficult. No work recommended.
MP18	Unknown	Humboldt Crossing	Class II	Access to site difficult. No work recommended.
MP19	No structure	NA	Class III	Excavate and armor small channel around east side of flat and install 24-inch CMP.

Map Point (MP)	Existing Size (inch)	Type	Watercourse Class	Action
MP20	No structure	NA	Class III	Remove sediment and install a 24-inch ~60-ft long pipe. Install a rolling dip ~150-ft above crossing on road.
MP21	No structure	NA	Class III	A culvert is needed to convey the watercourse across the roadway. This section of road is off the property but improvements at this site are necessary.

The proposed work on stream crossings has an existing Notification of Lake and Streambed Alteration through the CDFW, Final Agreement pending. However, a 401 Water Quality Certification through the SWRCB is still required before starting any work within stream channels.

2.5. Legacy Waste Discharges

The region was historically logged with legacy logging roads and landings throughout the site. Existing developed areas were utilized for the current cannabis operations. **MP4, MP8, and MP13** are locations which intersect riparian buffers and are associated with legacy waste discharges (See Stream Crossing Maintenance).

3. Erosion Prevention and Sediment Capture

Generally, all graded flats on the parcel require maintenance to reduce water concentration which can lead to erosion of the fill slope. This can be done by digging drainage ditches to channel the water off and away from the fill slope or by reshaping the flat with 3-5% outslope. Additionally, all graded flats should have seed and straw applied to encourage vegetated growth for stabilization. The disturbed areas consisted of the cultivation areas, soils/amendment piles, unstable road segments, and a processing area as shown on the Disturbed Area Map. Map points correspond to the Remediation Summary Table found in section 10 of this report. Cultivation on the site takes place in several locations and totals ~40,700 square feet. Cultivation areas are delineated on the Site Map **(CA).** The site had approximately 90,220 square feet of disturbed area with some portions within riparian setbacks **(MP4, MP8 and MP13).** Portions within riparian setbacks are linked to historical development and plans to restore said areas have been developed and are part of the discharger's Notification of Lake and Streambed Alteration through the California Department of Fish and Wildlife (CDFW). At **MP8** and **MP13** cultivation used to take place in 2017 and all cultivation related wastes in these locations was removed as of the site visit conducted in March of 2019. At **MP24** a failing cutslope slid over old greenhouse and cultivation material on a graded flat. Remove cultivation material and stabilize cutback. The slide is not impacting riparian habitat, but a geotechnical study may be needed for further recommendations on stabilization.

4. Water Uses

Water for cultivation and domestic uses is drawn from the permitted groundwater well and water for cannabis is quantified with a digital measuring device. All irrigation infrastructure will be regularly inspected for leaks and immediately repaired if any are found. Weed free mulch or straw will be used in cultivation areas that do not have ground cover to reduce evaporation and conserve water. The cultivator will record daily irrigation water usage and maintain records on site for a minimum of 5 years. Since the site sources water from a confined aquifer there are no forbearance restrictions. The estimated annual water use is summarized below in Table 3.

Table 3. Annual water uses on the parcel.

Source	Use	Start Date	End Date	To Storage (gallons)	To Use (gallons)
Well	Domestic	Mar. 1	Nov. 1		20,000
Well	Cannabis	Mar. 1	Nov. 1		360,500

The site has a total of 46,000 gallons of water storage available which is summarized in Table 4. To conserve water, a straw or mulch ground cover should be applied to reduce water evaporation. Water conservation methods such as watering method and timing will be employed to ensure water is applied at agronomic rates.

Table 4. Summary of water storage on the parcel.

Water Storage Type	Size (gallons)	Quantity	Total (gallons)
Hard Tank	5,000	6	30,000
Hard Tank	3,500	1	3,500
Hard Tank	3,000	4	12,000
Hard Tank	500	1	500
	Total		**46,000**

5. Fertilizers, Pesticides and Herbicides

5.1. Application, Storage and Disposal

All fertilizers and pesticides which were stored at **MP8** and **MP13** have been removed. All fertilizers and soil amendments shall always be store in locations where they cannot enter a waterbody (surface or groundwater). Any liquid fertilizers staged near hard tanks shall be kept and stored in lidded totes to prevent spills or leakage. Before the onset of the winter period all chemicals shall be stored in a covered building. Fertilizers and pesticides shall be applied at agronomic rates specified on the product label. The enrollee will keep a log of their fertilizers and pesticides use for annual reporting. All labels will be kept, and directions followed when amendments and fertilizers are applied. Agricultural chemicals will not be applied within 48-hr of a predicted rain event with a 50% or greater chance of 0.25-inches. Disposal of unused products will be consistent with labels on containers. Empty containers will be disposed of at an authorized recycling center. A spill clean-up kit will be stored in the garage/shop. No restricted materials or pesticides will be used or stored on site. No greater than 319 pounds of nitrogen per acre per year shall be applied. A summary of fertilizers and pesticides used annually are listed below in Table 5.

Table 5. Overview of annual chemical use.

Product Name	Chemical Type	N-P-K or Active Ingredient	Annual Use (lbs. or gallons)
Regalia	Pesticide	Extract of *Reynoutria sachalinensis*	1 gallon
Double Nickel	Fungicide	*Bacillus amyloliquefaciens* strain D747	1 gallon
Mad Sea	Fertilizer	16-16-16	450 lbs.

5.2. Spill Prevention and Clean Up

A spill cleanup kit was not located during the site visit. A spill kit will need to be obtained and located near or made available wherever chemicals, fuels, or amendments are stored or used. In case of a major spill of fertilizers, or any petroleum products, the cannabis cultivator shall immediately notify the California Office of Emergency Services at 1-800-852-7550 and initiate cleanup activities for all spills that could enter a waterbody or degrade groundwater.

6. Petroleum

6.1. Use, Storage, and Disposal

A generator and solar arrays are used to power fans and lighting for the operation. There is no significant fuel storage on the properly. Small fuel canisters are used to fill generators. Generators require containment when in use, as do the small fuel canisters. Additionally, before the onset of the winter period, all small fuel canisters will need to be stored in a covered building. Fueling of the generators, as well as any other equipment or vehicles, will also take place outside of the riparian setbacks. All equipment containing petroleum derivatives will be inspected regularly for leaks. When the generators are not in use they will be stored in a covered building. A summary of annual petroleum is listed below in Table 6.

Table 6. Overview annual petroleum usage.

Product	Chemical Type	Annual Use (lbs. or gallons)
Diesel	Petroleum	5,000

7. Cultivation Waste, Trash/Refuse and Domestic Wastewater

7.1. Trash/Refuse Overview

Trash is stored in lidded bins and lawn and leaf bags near the multi-use shed. The trash was not within the riparian buffer however was near the flat's fillslope which descends toward a class III watercourse **MP25**.

All trash on the site shall be removed to a waste facility as often as possible to ensure it will not make its way down the fillslope and into the watercourse. At **MP26** a spent soils pile was observed. The soils were not in the riparian buffer however all spent soils shall be removed to a waste facility every year before the onset of the winter period. Otherwise, all soils and spent growth medium shall be properly contained with tarp and straw wattle to prevent rain runoff or wind from transporting constituents to nearby watercourses. Composting and soils piles must be limited to 100 cubic yards or 250 square feet.

7.2. Domestic Wastewater BPTC Measures

The site does not have a permitted septic system. Scoping for a proposed septic was complete however, a multi-use building was built in the desirable location. New scoping for a septic will be required. There is currently a privy located behind the multi-use building **MP22.** Although the privy is located outside or riparian setbacks, use of the privy will need to be discontinued. Portable toilets will need to be brought in immediately as a temporary means of managing human waste. All portable toilets shall serviced regularly and shall be located in stable locations and outside of riparian setbacks (for stable locations outside of riparian setbacks see Site Map).

8. Winterization Measures

8.1. Summary

It is required that winterization measures be completed annually before the onset of the winter rainy season. The SWRCB has defined the winter season as beginning November 1st and concluding April 1st. Winterization measures apply to cultivation areas, any additional disturbed areas including roads, and stream crossings. These measures aim to prepare the site for an extended period of heavy precipitation during which frequent access, monitoring, and maintenance can be challenging or infeasible. The end goal is to reduce the erosion of unstable areas and prevent the delivery of eroded sediment to sensitive water ways. One of the primary techniques of winterization consists of stabilizing all bare soils with straw and seed. Fiber rolls shall additionally be installed at grade breaks and along slopes of disturbed areas to break up flow paths, thereby reducing the speed and erosive energy of runoff. No heavy machinery shall be used during the winter season to avoid the degradation of saturated roadways and unstable surfaces. Soil stockpiles shall be guarded before the onset of winter with a cover and/or perimeter controls such as fiber rolls. Culverts shall be inspected and maintained to ensure integrity during winter. This includes clearing inlets and outlets of sediment and/or debris and ensuring that sufficient energy dissipation exists at outlets to reduce bank erosion. Seasonal access roads shall be locked to ensure that roads are not in use during the wet season by trespassers. Aside from the erosion control components to winterization, a general and thorough site cleanup will be performed to remove all refuse from the site. Additionally, all fertilizers and petroleum products to be left on site will be stored in secondary containment and locked in the shipping container to avoid spillage and discharge to surface or groundwater. Winterization measures for Medium or High-Risk Sites are covered in more detail in the Site Erosion and Sediment Control Plan to be submitted for that site.

9. Monitoring

Monitoring is broken up into 3 reports; Facility Status, Site Maintenance, and Storm Water Runoff Monitoring. For Low Risk sites the only monitoring report required is the Facility Status Report. For

Moderate and High-Risk sites all three monitoring reports need to be completed. See "Site Erosion and Sediment Control Plan" for details on the Site Maintenance and Storm Water Runoff Monitoring. Annual reports for the cultivation site will be submitted to the North Coast Regional Water Quality and Control Board (NCRWQCB) prior to March 1 of the following year. The annual report shall include the following: Facility Status, Site Maintenance, and Storm Water Runoff Monitoring; Name and contact information for the person responsible for operation, maintenance, and monitoring. Reporting documents can be emailed to northcoast@waterboards.ca.gov or mailed to 5550 Skylane Blvd., Ste. A, Santa Rosa, CA 95403.

Table 7. Facility status monitoring requirements.

Monitoring Requirement	**Description**
Winterization Measures Implemented	Report winterization procedures implemented, any outstanding measures, and the schedule for completion.
Tier Status Confirmation	Report any change in tier status. (Stabilization of disturbed areas may change the tier status of a facility. Contact the Regional Water Board if a change in status is appropriate.)
Third Party Identification	Report any change in third party status as appropriate.
Nitrogen Application	Report monthly and annual total nitrogen use for bulk, solid, and liquid forms of nitrogen. Provide the data as lbs./canopy acre/time (month or year) as described in Nitrogen Management Plan.

"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."

Legally Responsible Person_____ Date_____

10. Remediation Summary Table

Map Point (MP)	Topic	Issue	Remediation Measure	Treatment Priority	Expected Completion Date	Actual Completion Date
MP1	**Erosion Control Site Maintenance and Drainage Features**	A section of road receives a spring seep flow from a cut bank.	Install an inboard ditch (IBD) to capture the seep and keep it from running down the roadway. Reshape the existing rolling dips that were eroded from 2018 winter.	**High**	**Oct. 15 2019**	
MP2	**Stream Crossing Installation and Maintenance**	A seasonal road crosses the head of a Class III drainage with a channel width of 6-inches	Install a rock ford with 1-3 CY rock	**High**	**Dependent on CDFW and SWRCB permitting**	
MP3	**Stream Crossing Installation and Maintenance**	A seasonal road crosses the head of a Class III drainage with an existing 18-inch Corrugated Plastic Pipe (CPP). There were no signs of failure and the structure appeared to be sized correctly.	Clean the inlet and the outlet of culvert	**High**	**Dependent on CDFW and SWRCB permitting**	
MP4	**Stream Crossing Installation and Maintenance**	A seasonal road crosses a Class II stream with a channel width of 36-inches. The stream is running down the roadway ~ 300-ft before reconnecting back to the natural channel. The road leads to a rock quarry used to rock the road when the property was being logged.	Install a rock armored ford with ~10 CY rock. At this location there is also a spring seep coming out of cut bank ~ 50-ft to the northwest of site with a 12-inch Corrugated Metal Pipe (CMP). The spring is flowing onto the roadway. Remove the culvert and a construct rock lined inboard ditch to connect spring flow to drainage at MP4.	**High**	**Dependent on CDFW and SWRCB permitting**	

Map Point (MP)	Topic	Issue	Remediation Measure	Treatment Priority	Expected Completion Date	Actual Completion Date
MP5	**Erosion Control Site Maintenance and Drainage Features**	A spring seep from the cutslope of a seasonal road above a Class III watercourse is running onto the roadway and creating surface erosion.	Install a rocked rolling dip to convey water off the road.	**High**	**Oct. 15 2019**	
MP6	**Stream Crossing Installation and Maintenance**	A seasonal road crosses a Class III drainage. The drainage is being diverted into an inboard ditch for ~50-ft. The drainage is being conveyed to MP7 down a different water course creating minor in-channel erosion from the increased flows.	Install a 24-inch minimum CPP culvert with a critical dip to convey flow across the road to the natural channel.	**High**	**Dependent on CDFW and SWRCB permitting**	
MP7	**Stream Crossing Installation and Maintenance**	A seasonal road with an existing 18-inch Corrugated Plastic Pipe on a Class III drainage. The stream crossing was in good condition. The culvert will be receiving much less flow after STX4 is installed.	Rock the outfall and install a critical dip.	**High**	**Dependent on CDFW and SWRCB permitting**	

Map Point (MP)	Topic	Issue	Remediation Measure	Treatment Priority	Expected Completion Date	Actual Completion Date
MP8	**Erosion Control Site Maintenance and Drainage Features & Stream Crossing Installation and Maintenance**	An old graded flat opened a series of spring seeps that are currently flowing around the flat and into a Class II stream. The springs flow all year and the existing drainage ditch has no shade or riparian vegetation. Cultivation activities on the flat have been discontinued and cleaned up. The flat will be decommissioned and restored. When the flat was created, the earth pushed over large logs creating perched fill and unstable fill slopes near the Class II stream	Construct a new rock lined channel with 2-ft width and a 2:1 side slope will be dug across the south extent of the flat to connect one of the springs directly to the existing Class II stream. Most the existing channel around the backside of the flat will stay in place. Channel banks will be vegetated to shade and prevent an increase in water temperature. The perched fill will be pulled back to a 2:1 slope with banks stabilized with seed and straw and logs placed at the toe. The spring seep is conveyed under the roadway with an 18-inch CPP. By the culvert outfall the drainage is impeded by a fence and then drains to the Class II in two locations. Remove the culvert, fence and create a rock lined channel to convey the spring flow to the Class II stream	**High**	**Dependent on CDFW and SWRCB permitting**	
MP9	**Stream Crossing Installation and Maintenance**	A Class III drainage running down the seasonal road for ~20-ft and creating a gully where it runs off the road. The diverted drainage is eroding the roadway and the fill slope of the road.	Decommission the crossing with channel excavation armored with ~1-5 CY rock. Also, the inboard ditch ~30 above STX7 is capturing a spring seep. Excavate a large waterbar to drain seep across the road. Install large waterbars ~100-ft above crossing as flagged in the field, to hydrologically disconnect the road from the stream system.	**High**	**Dependent on CDFW and SWRCB permitting**	

Map Point (MP)	Topic	Issue	Remediation Measure	Treatment Priority	Expected Completion Date	Actual Completion Date
MP10/MP11	**Stream Crossing Installation and Maintenance**	A Class III drainage is being conveyed down an IBD ~ 50-ft before crossing the roadway in an 18-inch diameter culvert	Install a 30" diameter pipe to align with the natural upstream drainage. Due to steep upstream channel gradient and abnormal relative geometry/elevations of current inboard ditch and road prism, special care will need to go into installing a culvert inlet and armored connection with upstream channel that will be stable and functional. New culvert will cross two roads just to the east of where they split. Armor inlet and outlet with 10 CY rock each. Downslope from the location of the proposed culvert outflow, excavate a channel in the existing landing area to direct water toward natural swale located on the eastern extent of the landing. Armor new channel with approximately 10 CY rock.	**High**	**Dependent on CDFW and SWRCB permitting**	
MP12	**Stream Crossing Installation and Maintenance**	The culvert is plugged.	Clear the inlet and outlet of 12-inch CMP and maintain the IBD	**High**	**Dependent on CDFW and SWRCB permitting**	

Map Point (MP)	Topic	Issue	Remediation Measure	Treatment Priority	Expected Completion Date	Actual Completion Date
MP13	**Erosion Control Site Maintenance and Drainage Features & Stream Crossing Installation and Maintenance**	An old graded flat opened a large spring which is being daylighted for ~ 75-ft. The spring channel is over steepened near access road (western slope) and will need the banks to be pulled back	Pull the bank slopes back to a 2:1. The daylighted spring will be planted to reduce water temperatures and create riparian habitat. The drainage goes under the access road through an existing 18-inch CPP. The culvert is adequately sized but will need the inlet and outlet cleared out of sediment and debris.	**High**	**Dependent on CDFW and SWRCB permitting**	
MP14	**Stream Crossing Installation and Maintenance**	A very large and old (>30 yrs) Humboldt crossing located on an old logging road that is no longer used. The crossing conveys a Class II stream and was not actively eroding. Full removal of the crossing and restoration of the channel would cause significant disturbance that is not warranted.	Recommend a light touch approach utilizing minor excavation at two locations to ensure that stream and adjacent spring doesn't flow onto the road surface for extended lengths and planting of native species to widen the riparian corridor.	**High**	**Dependent on CDFW and SWRCB permitting**	
MP15	**Stream Crossing Installation and Maintenance**	A filled crossing on an old logging road that is not used. The crossing is conveying a Class II drainage.	The crossing should be pulled, and the channel should be restored. The access to this site is difficult and is not actively eroding and shall not be considered a threat to water quality. Restore if feasible.	**High**	**Dependent on CDFW and SWRCB permitting**	

Map Point (MP)	Topic	Issue	Remediation Measure	Treatment Priority	Expected Completion Date	Actual Completion Date
MP16	**Stream Crossing Installation and Maintenance**	A filled crossing on an old logging road that is not used. The crossing is conveying a Class II drainage.	The crossing should be pulled, and the channel should be restored. The access to this site is difficult and is not actively eroding or a threat to water quality. Restore if feasible.	**High**	**Dependent on CDFW and SWRCB permitting**	
MP17	**Stream Crossing Installation and Maintenance**	A Humboldt crossing on a Class II stream on an old, overgrown logging road. The stream hasn't restored itself but is not actively eroding or a threat to water quality. The access to this site is difficult and will likely create more water quality problems.	Restore if feasible.	**High**	**Dependent on CDFW and SWRCB permitting**	
MP18	**Stream Crossing Installation and Maintenance**	An old Humboldt crossing on a Class II stream on an old, overgrown logging road. The crossing has naturally restored itself and is not actively eroding or a threat to water quality. There is still one of the logs in the stream bank. The access to this site is difficult and will likely create more water quality problems.	Restore if feasible.	**High**	**Dependent on CDFW and SWRCB permitting**	

Map Point (MP)	Topic	Issue	Remediation Measure	Treatment Priority	Expected Completion Date	Actual Completion Date
MP19	**Stream Crossing Installation and Maintenance & Erosion Control Site Maintenance and Drainage Features**	A Class III drainage is flowing into an old graded flat, which was likely the surface rock quarry for the logging road. Muddy sections observed in parking area.	Excavate and armor small channel around east side of flat and install 24-inch diameter CMP. Store all chemicals and cultivation material outside of the stream buffer (see site overview map) and surface rock the parking area where muddy sections were observed.	**High**	**Dependent on CDFW and SWRCB permitting**	
MP20	**Stream Crossing Installation and Maintenance**	Sediment and fill from seasonal access road plugging up a Class III seasonal drainage.	Remove sediment and install a 24-inch ~60-ft long pipe. Install a rolling dip ~150-ft above crossing on road.	**High**	**Dependent on CDFW and SWRCB permitting**	
MP21	**Stream Crossing Installation and Maintenance**	A Class III drainage crosses main access road adjacent to the gated entrance of the property. A culvert is needed to convey the watercourse across the roadway.	This section of road is off the property but improvements at this site are necessary.	**High**	**Dependent on CDFW and SWRCB permitting**	
MP22	**Trash/Refuse and Domestic Wastewater**	The site does not have a permitted septic system. Scoping for a proposed septic was complete however, a multi-use building was built in the desirable location. Additionally, there is currently a privy located behind the multi-use building.	New scoping for a septic will be required. Use of the privy will need to be discontinued. Portable toilets will need to be brought in immediately as a temporary means of managing human waste.	**High**	**Oct. 15 2019**	

Map Point (MP)	Topic	Issue	Remediation Measure	Treatment Priority	Expected Completion Date	Actual Completion Date
MP23	**Erosion Control Site Maintenance and Drainage Features**	A cut slope spring seep is running down the roadway.	Install more rolling dips just below road intersection to divert flow off the access road.	**High**	**Oct. 15 2019**	
MP24	**Erosion Control Site Maintenance and Drainage Features**	A failing cutslope slid over old greenhouse and cultivation material on a graded flat. Remove cultivation material and stabilize cutback.	The slide is not impacting riparian habitat, but a geotechnical study may be needed for further recommendations on stabilization.	**High**	**Oct. 15 2019**	
MP25	**Trash/Refuse and Domestic Wastewater**	Trash near the edge of flat.	Keep trash out of areas with potential for the waste to be transported to watercourses. Remove trash off the site to a waste facility as often as possible.	**High**	**Oct. 15 2019**	
MP26	**Cultivation Related Waste**	Spent soils pile was observed without containment.	Spent soils shall be removed to a waste facility every year before the onset of the winter period. Otherwise, all soils and spent growth medium shall be properly contained with tarp and straw wattle to prevent rain runoff or wind from transporting constituents to nearby watercourses.	**High**	**Oct. 15 2019**	

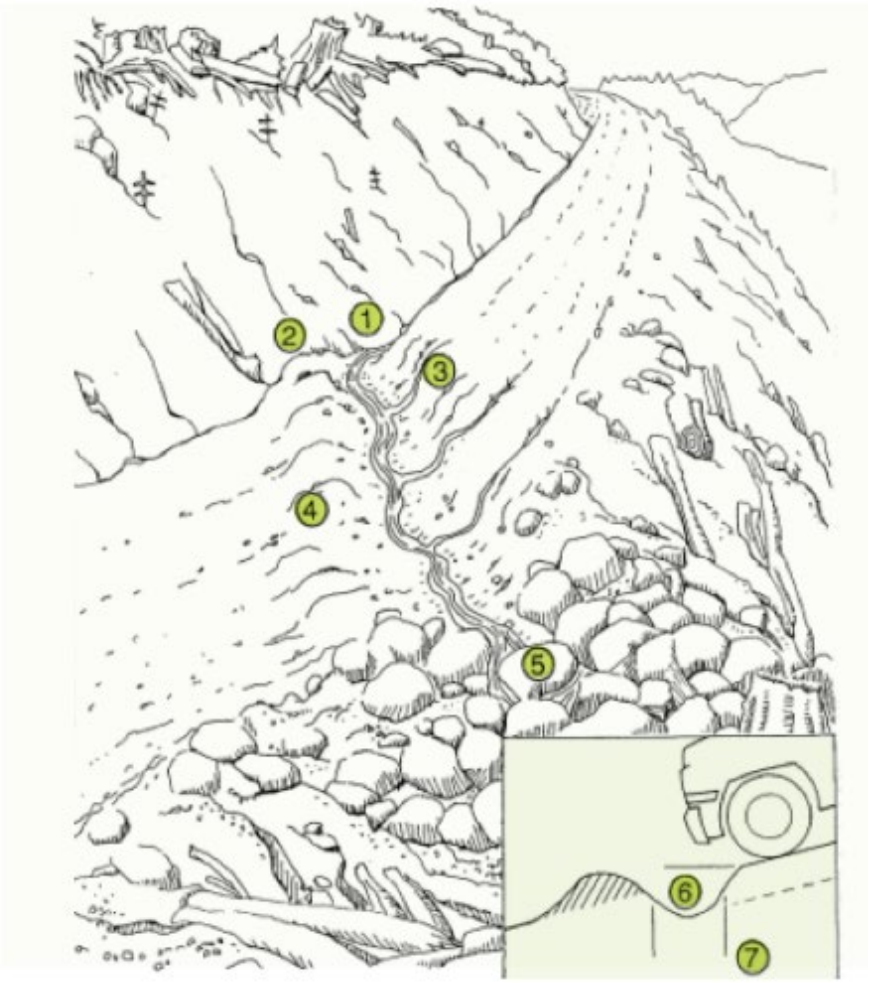


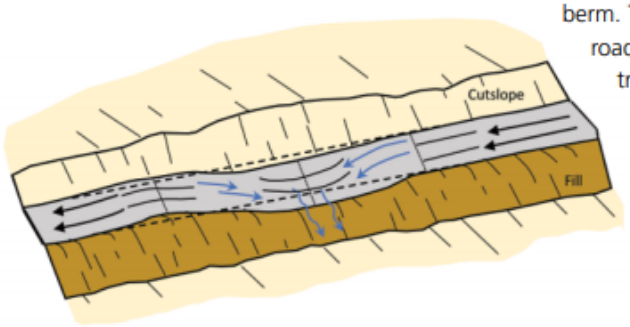
FIGURE 40. *Waterbars are constructed on unsurfaced forest and ranch roads that will have little or no traffic during the wet season. The waterbar should be extended to the cutbank to intercept all ditch flow (1) and extend beyond the shoulder of the road. A berm (2) must block and prevent ditch flow from continuing down the road during flood flows. The excavated waterbar (3) should be constructed to be self-cleaning, typically with a 30° skew to the road alignment with the excavated material bermed on the downhill grade of the road (4). Water should always be discharged onto the downhill side on a stable slope protected by vegetation. Rock (shown in the figure) should not be necessary if waterbars are spaced close enough to prevent serious erosion. (5) The cross ditch depth (6) and width (7) must allow vehicle cross-over without destroying the function of the drain. Several alternate types of waterbars are possible, including one that drains only the road surface (not the ditch), and one that drains the road surface into the inside ditch (BCMF, 1991).*

TABLE 21. Table of rolling dip dimensions[1]

Road grade (%)	Upslope approach[2] (distance from up-road start of rolling dip to trough) (ft)	Reverse grade[2] (distance from trough to crest) (ft)	Depth below average road grade at discharge end of trough[2] (ft)	Depth below average road grade at upslope end of trough[2] (ft)
<6	55	15–20	0.9	0.3
8	65	15–20	1.0	0.2
10	75	15–20	1.1	0.1
12	85	20–25	1.2	0.1
>12	100	20–25	1.3	0.1

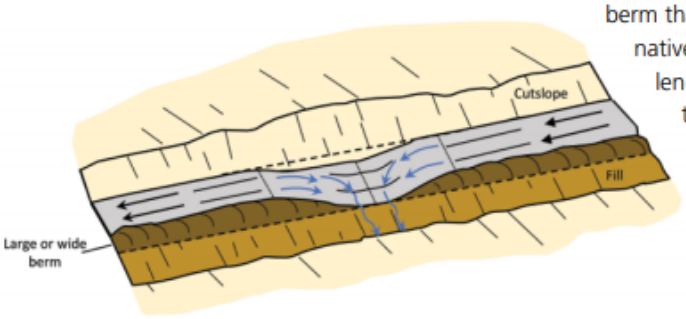
Type 1 Rolling Dip (Standard)

Type 1 rolling dips are used where road grades are less than about 12-14% and road runoff is not confined by a large through cut or berm. The axis of the dip should be perpendicular to the road alignment and sloped at 3-4% across the road tread. Steep roads will have longer and more abrupt dip dimensions to develop reverse grade through the dip axis. The road tread and/or the dip outlet can be rocked to protect against erosion, if needed.



Type 2 Rolling Dip (Through-cut or thick berm road reaches)

Type 2 rolling dips are constructed on roads up to 12-14% grade where there is a through cut up to 3 feet tall, or a wide or tall berm that otherwise blocks road drainage. The berm or native through cut material should be removed for the length of the dip, or at least through the axis of the dip, to the extent needed to provide for uninterrupted drainage onto the adjacent slope. The berm and slope material can be excavated and endhauled, or the material can be sidecast onto native slopes up to 45%, provided it will not enter a stream.



Type 3 Rolling Dip (Steep road grade)

Type 3 rolling dips are utilized where road grades are steeper than about 12% and it is not feasible to develop a reverse grade that will also allow passage of the design vehicle (steep road grades require more abrupt grade reversals that some vehicles may not be able to traverse without bottoming out).

Instead of relying on the dip's grade reversal to turn runoff off the roadbed, the road is built with an exaggerated outslope of 6-8% across the dip axis. Road runoff is deflected obliquely across the dip axis and is shed off the outsloped section rather than continuing down the steep road grade.

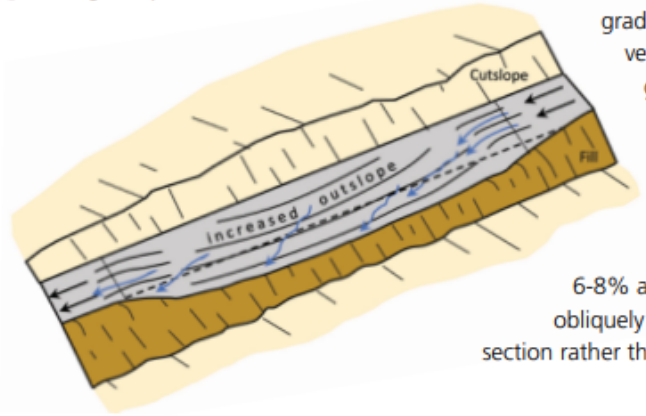
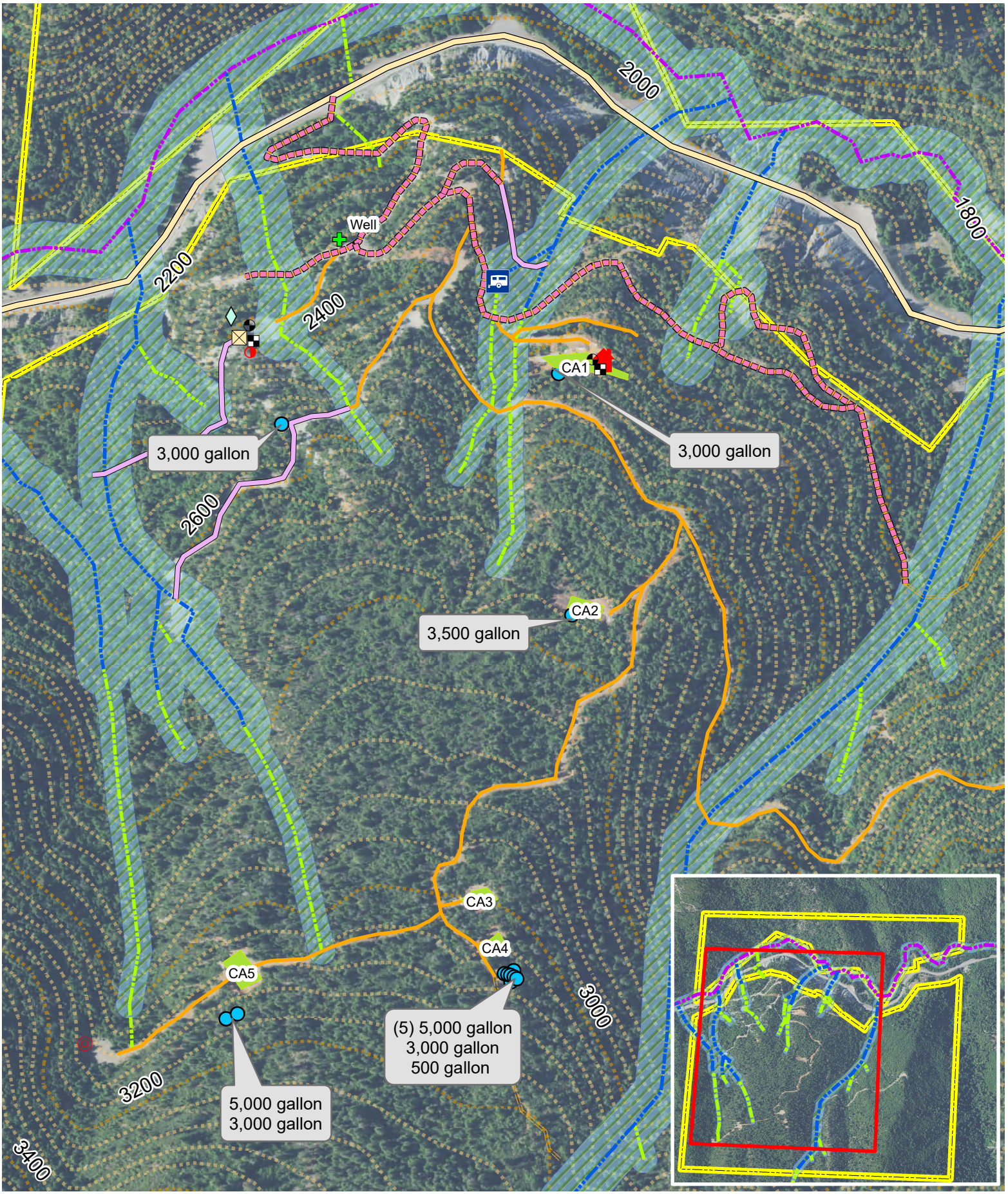


FIGURE 36. *Rolling dip types*

Work Cited

[1]Weaver, William, PHD, Eileen Weppner, P.G., and Danny Hagans, CPESC. "Handbook for Forest, Ranch, & Rural Roads: A Guide for Planning, Designing, Constructing, Reconstructing, Upgrading, Maintaining, and Closing Wildland Roads." Pacific Watershed Associates. 2014. Accessed 2019. http://www.pacificwatershed.com/sites/default/files/5_-_chapter_4_-_road_and_stream_crossing_design.pdf



Site Map APN 316-071-004

Inset
Parcel Boundary
Cultivation Area
Stream Buffer

Roads
Skid
Permanent
Seasonal
Road Decom
PG&E
Rolling Dips
Water Bars

Watercourses
Class I
Class II
Class III
Class IV
Residence

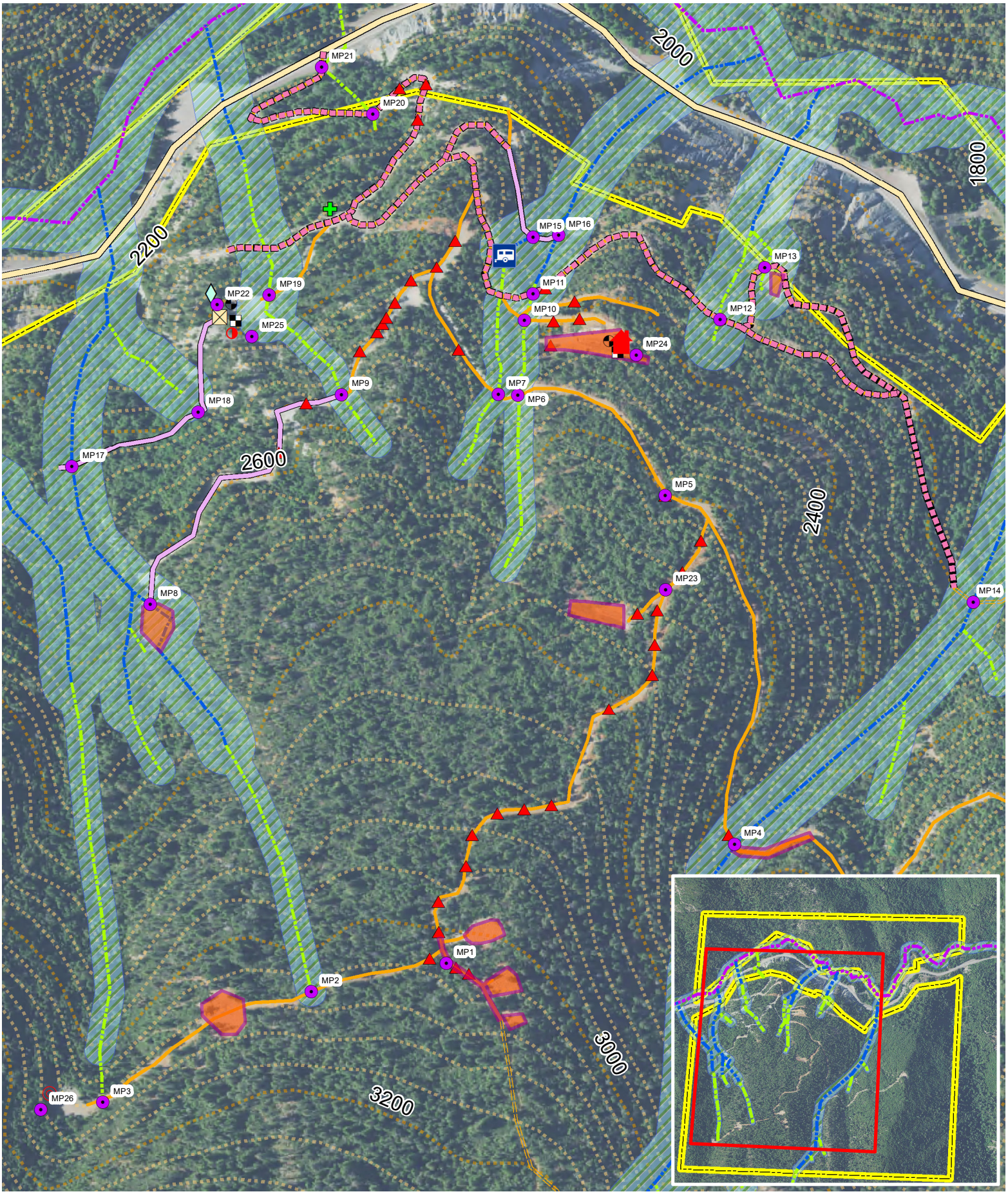
RV/Trailer
Privy
Storage Shed
Fuel Storage
Fertilizer Storage
Spoils

Water Tank

N
W E
S

Contour Interval: 40ft
imagery: 2016 NAIP

0 250 500
Feet



Disturbed Area Map APN 316-071-004

- Inset
- Parcel Boundary
- Stream Buffer
- Disturbed Area

Roads

- Skid
- Permanent
- Seasonal
- Road Decom
- PG&E
- Rolling Dips
- Water Bars

Watercourses

- Class I
- Class II
- Class III
- Class IV
- Residence
- RV/Trailer
- Privy
- Storage Shed
- Fuel Storage
- Fertilizer Storage
- Spoils
- Garbage
- Map Points

N
W E
S

Contour Interval: 40ft
imagery: 2016 NAIP

0 250 500 Feet

Best Practical Treatment or Control (BPTC) Measures

SECTION 2 – REQUIREMENTS RELATED TO WATER DIVERSIONS AND WASTE DISCHARGE FOR CANNABIS CULTIVATION

The following Requirements apply to any water diversion or waste discharge related to cannabis cultivation.

No.	TERM
Land Development and Maintenance, Erosion Control, and Drainage Features	
Limitations on Earthmoving	
1.	Cannabis cultivators shall not conduct grading activities for cannabis cultivation land development or alteration on slopes exceeding 50 percent grade, or as restricted by local county or city permits, ordinances, or regulations for grading, agriculture, or cannabis cultivation; whichever is more stringent shall apply. The grading prohibition on slopes exceeding 50 percent does not apply to site mitigation or remediation if the cannabis cultivator is issued separate WDRs or an enforcement order for the activity by the Regional Water Board Executive Officer.
2.	Finished cut and fill slopes, including side slopes between terraces, shall not exceed slopes of 50 percent and should conform to the natural pre-grade slope whenever possible.
3.	Cannabis cultivators shall not drive or operate vehicles or equipment within the riparian setbacks or within waters of the state unless authorized under 404/401 CWA permits, a CDFW LSA Agreement, coverage under the Cannabis General Order water quality certification, or site-specific WDRs issued by the Regional Water Board. This requirement does not prohibit driving on established, maintained access roads that are in compliance with this Policy.
4.	Cannabis cultivation land development and access road construction shall be designed by qualified professionals. Cannabis cultivators shall conduct all construction or land development activities to minimize grading, soil disturbance, and disturbance to aquatic and terrestrial habitat.
5.	The cannabis cultivator shall control all dust related to cannabis cultivation activities to ensure dust does not produce sediment-laden runoff. The cannabis cultivator shall implement dust control measures, including, but not limited to, pre-watering of excavation or grading sites, use of water trucks, track-out prevention, washing down vehicles or equipment before leaving a site, and prohibiting land disturbance activities when instantaneous wind speeds (gusts) exceed 25 miles per hour. Cannabis cultivators shall grade access roads in dry weather while moisture is still present in soil to minimize dust and to achieve design soil compaction, or when needed use a water truck to control dust and soil moisture.
Construction Equipment Use and Limitations	

6.	Cannabis cultivators shall employ spill control and containment practices to prevent the discharge of fuels, oils, solvents and other chemicals to soils and waters of the state.
7.	Cannabis cultivators shall stage and store equipment, materials, fuels, lubricants, solvents, or hazardous or toxic materials in locations that minimize the potential for discharge to waters of the state. At a minimum, the following measures shall be implemented: 1. Designate an area outside the riparian setback for equipment storage, short-term maintenance, and refueling. Cannabis cultivator shall not conduct any maintenance activity or refuel equipment in any location where the petroleum products or other pollutants may enter waters of the state as per Fish and Game Code section 5650 (a)(1). 2. Frequently inspect equipment and vehicles for leaks. 3. Immediately clean up leaks, drips, and spills. Except for emergency repairs that are necessary for safe transport of equipment or vehicles to an appropriate repair facility, equipment or vehicle repairs, maintenance, and washing onsite is prohibited. 4. If emergency repairs generate waste fluids, ensure they are contained and properly disposed or recycled off-site. 5. Properly dispose of all construction debris off-site. 6. Use dry cleanup methods (e.g., absorbent materials, cat litter, and/or rags) whenever possible. Sweep up, contain, and properly dispose of spilled dry materials.
Erosion Control	
8.	The cannabis cultivator shall use appropriate erosion control measures to minimize erosion of disturbed areas, potting soil, or bulk soil amendments to prevent discharges of waste. Fill soil shall not be placed where it may discharge into surface water. If used, weed-free straw mulch shall be applied at a rate of two tons per acre of exposed soils and, if warranted by site conditions, shall be secured to the ground.
9.	The cannabis cultivator shall not plant or seed noxious weeds. Prohibited plant species include those identified in the California Invasive Pest Plant Council's database, available at: www.cal-ipc.org/paf/. Locally native, non-invasive, and non-persistent grass species may be used for temporary erosion control benefits to stabilize disturbed land and prevent exposure of disturbed land to rainfall. Nothing in this term may be construed as a ban on cannabis cultivation that complies with the terms of this Policy.
10.	Cannabis cultivators shall incorporate erosion control and sediment detention devices and materials into the design, work schedule, and implementation of the cannabis cultivation activities. The erosion prevention and sediment capture measures shall be effective in protecting water quality. • Interim erosion prevention and sediment capture measures shall be implemented within seven days of completion of grading and land disturbance activities, and

	shall consist of erosion prevention measures and sediment capture measures including: ○ Erosion prevention measures are required for any earthwork that uses heavy equipment (e.g., bulldozer, compactor, excavator, etc.). Erosion prevention measures may include surface contouring, slope roughening, and upslope storm water diversion. Other types of erosion prevention measures may include mulching, hydroseeding, tarp placement, revegetation, and rock slope protection. ○ Sediment capture measures include the implementation of measures such as gravel bag berms, fiber rolls, straw bale barriers, properly installed silt fences, and sediment settling basins. • Long-term erosion prevention and sediment capture measures shall be implemented as soon as possible and prior to the onset of fall and winter precipitation. Long-term measures may include the use of heavy equipment to reconfigure access roads or improve access road drainage, installation of properly-sized culverts, gravel placement on steeper grades, and stabilization of previously disturbed land. • Maintenance of all erosion protection and sediment capture measures is required year round. Early monitoring allows for identification of problem areas or underperforming erosion or sediment control measures. Verification of the effectiveness of all erosion prevention and sediment capture measures is required as part of winterization activities.
11.	Cannabis cultivators shall only use geotextiles, fiber rolls, and other erosion control measures made of loose-weave mesh (e.g., jute, coconut (coir) fiber, or from other products without welded weaves). To minimize the risk of ensnaring and strangling wildlife, cannabis cultivators shall not use synthetic (e.g., plastic or nylon) monofilament netting materials for erosion control for any cannabis cultivation activities. This prohibition includes photo- or bio-degradable plastic netting.
12.	Cultivation sites constructed on or near slopes with a slope greater than or equal to 30 percent shall be inspected for indications of instability. Indications of instability include the occurrence of slope failures at nearby similar sites, weak soil layers, geologic bedding parallel to slope surface, hillside creep (trees, fence posts, etc. leaning downslope), tension cracks in the slope surface, bulging soil at the base of the slope, and groundwater discharge from the slope. If indicators of instability are present, the cannabis cultivator shall consult with a qualified professional to design measures to stabilize the slope to prevent sediment discharge to surface waters.
13.	For areas outside of riparian setbacks or for upland areas, cannabis cultivators shall ensure that rock placed for slope protection is the minimum amount necessary and is part of a design that provides for native plant revegetation. If retaining walls or other structures are required to provide slope stability, they shall be designed by a qualified professional.
14.	Cannabis cultivators shall monitor erosion control measures during and after each storm event that produces at least 0.5 in/day or 1.0 inch/7 days of precipitation, and repair or replace, as needed, ineffective erosion control measures immediately.

Access Road/Land Development and Drainage	
15.	Access roads shall be constructed consistent with the requirements of California Code of Regulations Title 14, Chapter 4. The Road Handbook describes how to implement the regulations and is available at <http://www.pacificwatershed.com/PWA-publications-library>. Existing access roads shall be upgraded to comply with the Road Handbook.
16.	Cannabis cultivators shall obtain all required permits and approvals prior to the construction of any access road constructed for cannabis cultivation activities. Permits may include section 404/401 CWA permits, Regional Water Board WDRs (when applicable), CDFW LSA Agreement, and county or local agency permits.
17.	Cannabis cultivators shall ensure that all access roads are hydrologically disconnected to receiving waters to the extent possible by installing disconnecting drainage features, increasing the frequency of (inside) ditch drain relief as needed, constructing out-sloped roads, constructing energy dissipating structures, avoiding concentrating flows in unstable areas, and performing inspection and maintenance as needed to optimize the access road performance.
18.	New access road alignments should be constructed with grades (slopes) of 3- to 8-percent, or less, wherever possible. Forest access roads should generally be kept below 12-percent except for short pitches of 500 feet or less where road slopes may go up to 20-percent. These steeper access road slopes should be paved or rock surfaced and equipped with adequate drainage. Existing access roads that do not comply with these limits shall be inspected by a qualified professional to determine if improvements are needed.
19.	Cannabis cultivators shall decommission or relocate existing roads away from riparian setbacks whenever possible. Roads that are proposed for decommissioning shall be abandoned and left in a condition that provides for long-term, maintenance-free function of drainage and erosion controls. Abandoned roads shall be blocked to prevent unauthorized vehicle traffic.
20.	If site conditions prohibit drainage structures (including rolling dips and ditch-relief culverts) at adequate intervals to avoid erosion, the cannabis cultivator shall use bioengineering techniques[12] as the preferred measure to minimize erosion (e.g., live fascines). If bioengineering cannot be used, then engineering fixes such as armoring (e.g., rock of adequate size and depth to remain in place under traffic and flow conditions) and velocity dissipaters (e.g., gravel-filled "pillows" in an inside ditch to trap sediment) may be used for problem sites. The maximum distance between water breaks shall not exceed those defined in the Road Handbook.
21.	Cannabis cultivators shall have a qualified professional design the optimal access road alignment, surfacing, drainage, maintenance requirements, and spoils handling

[12] A Primer on Stream and River Protection for the Regulator and Program Manager: Technical Reference Circular W.D. 02-#1, San Francisco Bay Region, California Regional Water Board (April 2003) http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/stream_wetland/streamprotectioncircular.pdf.

	procedures.
22.	Cannabis cultivators shall ensure that access road surfacing, especially within a segment leading to a waterbody, is sufficient to minimize sediment delivery to the wetland or waterbody and maximize access road integrity. Road surfacing may include pavement, chip-seal, lignin, rock, or other material appropriate for timing and nature of use. All access roads that will be used for winter or wet weather hauling/traffic shall be surfaced. Steeper access road grades require higher quality rock (e.g., crushed angular versus river-run) to remain in place. The use of asphalt grindings is prohibited.
23.	Cannabis cultivators shall install erosion control measures on all access road approaches to surface water diversion sites to reduce the generation and transport of sediment to streams.
24.	Cannabis cultivators shall ensure that access roads are out-sloped whenever possible to promote even drainage of the access road surface, prevent the concentration of storm water flow within an inboard or inside ditch, and to minimize disruption of the natural sheet flow pattern off a hill slope to a stream.
25.	If unable to eliminate inboard or inside ditches, the cannabis cultivator shall ensure adequate ditch relief culverts to prevent down-cutting of the ditch and to reduce water runoff concentration, velocity, and erosion. Ditches shall be designed and maintained as recommended by a qualified professional. To avoid point-source discharges, inboard ditches and ditch relief culverts shall be discharged onto vegetated or armored slopes that are designed to dissipate and prevent runoff channelization. Inboard ditches and ditch relief culverts shall be designed to ensure discharges into natural stream channels or watercourses are prevented.
26.	Cannabis cultivators shall ensure that access roads are not allowed to develop or show evidence of significant surface rutting or gullying. Cannabis cultivators shall use water bars and rolling dips as designed by a qualified professional to minimize access road surface erosion and dissipate runoff.
27.	Cannabis cultivators shall only grade ditches when necessary to prevent erosion of the ditch, undermining of the banks, or exposure of the toe of the cut slope to erosion. Cannabis cultivators shall not remove more vegetation than necessary to keep water moving, as vegetation prevents scour and filters out sediment.
28.	Access road storm water drainage structures shall not discharge onto unstable slopes, earthen fills, or directly to a waterbody. Drainage structures shall discharge onto stable areas with straw bales, slash, vegetation, and/or rock riprap.
29.	Sediment control devices (e.g., check dams, sand/gravel bag barriers, etc.) shall be used when it is not practical to disperse storm water before discharge to a waterbody. Where potential discharge to a wetland or waterbody exists (e.g., within 200 feet of a waterbody) access road surface drainage shall be filtered through vegetation, slash, other appropriate material, or settled into a depression with an outlet with adequate drainage. Sediment basins shall be engineered and properly sized to allow sediment settling, spillway stability, and maintenance activities.

Drainage Culverts (See also Watercourse Crossings)	
30.	Cannabis cultivators shall regularly inspect ditch-relief culverts and clear them of any debris or sediment. To reduce ditch-relief culvert plugging by debris, cannabis cultivators shall use 15- to 24-inch diameter pipes, at minimum. In forested areas with a potential for woody debris, a minimum 18-inch diameter pipe shall be used to reduce clogging. Ditch relief culverts shall be designed by a qualified professional based on site-specific conditions.
31.	Cannabis cultivators shall ensure that all permanent watercourse crossings that are constructed or reconstructed are capable of accommodating the estimated 100-year flood flow, including debris and sediment loads. Watercourse crossings shall be designed and sized by a qualified professional.
Cleanup, Restoration, and Mitigation	
32.	Cannabis cultivators shall limit disturbance to existing grades and vegetation to the actual site of the cleanup or remediation and any necessary access routes.
33.	Cannabis cultivators shall avoid damage to native riparian vegetation. All exposed or disturbed land and access points within the stream and riparian setback with damaged vegetation shall be restored with regional native vegetation of similar native species. Riparian trees over four inches diameter at breast height shall be replaced by similar native species at a ratio of three to one (3:1). Restored areas must be mulched, using at least 2 to 4 inches of weed-free, clean straw or similar biodegradable mulch over the seeded area. Mulching shall be completed within 30 days after land disturbance activities in the areas cease. Revegetation planting shall occur at a seasonally appropriate time until vegetation is restored to pre-cannabis or pre-Legacy condition or better. Cannabis cultivators shall stabilize and restore any temporary work areas with native vegetation to pre-cannabis cultivation or pre-Legacy conditions or better. Vegetation shall be planted at an adequate density and variety to control surface erosion and re-generate a diverse composition of regional native vegetation of similar native species.
34.	Cannabis cultivators shall avoid damage to oak woodlands. Cannabis cultivator shall plant three oak trees for every one oak tree damaged or removed. Trees may be planted in groves in order to maximize wildlife benefits and shall be native to the local county.
35.	Cannabis cultivators shall develop a revegetation plan for: • All exposed or disturbed riparian vegetation areas, • any oak trees that are damaged or removed, and • temporary work areas. Cannabis cultivators shall develop a monitoring plan that evaluates the revegetation plan for five years. Cannabis cultivators shall maintain annual inspections for the purpose of assessing an 85 percent survival and growth of revegetated areas within a five-year period. The presence of exposed soil shall be documented for three years following revegetation work. If the revegetation results in less than an 85 percent success rate, the unsuccessful vegetation areas shall be replanted. Cannabis cultivators shall identify the location and extent of exposed soil associated with the site; pre- and post-revegetation

	work photos; diagram of all areas revegetated, the planting methods, and plants used; and an assessment of the success of the revegetation program. Cannabis cultivators shall maintain a copy of the revegetation plan and monitoring results onsite and make them available, upon request, to Water Boards staff or authorized representatives. An electronic copy of monitoring results is acceptable in Portable Document Format (PDF).
36.	Cannabis cultivators shall revegetate soil exposed as a result of cannabis cultivation activities with native vegetation by live planting, seed casting, or hydroseeding within seven days of exposure.
37.	Cannabis cultivators shall prevent the spread or introduction of exotic plant species to the maximum extent possible by cleaning equipment before delivery to the cannabis cultivation Site and before removal, restoring land disturbance with appropriate native species, and post-cannabis cultivation activities monitoring and control of exotic species. Nothing in this term may be construed as a ban on cannabis cultivation that complies with the terms of this Policy.
Stream Crossing Installation and Maintenance	
Limitations on Work in Watercourses and Permanently Ponded Areas	
38.	Cannabis cultivators shall obtain all applicable permits and approvals prior to doing any work in or around waterbodies or within the riparian setbacks. Permits may include section 404/401 CWA permits, Regional Water Board WDRs (when applicable), and a CDFW LSA Agreement.
39.	Cannabis cultivators shall avoid or minimize temporary stream crossings. When necessary, temporary stream crossings shall be located in areas where erosion potential and damage to the existing habitat is low. Cannabis cultivators shall avoid areas where runoff from access roadway side slopes and natural hillsides will drain and flow into the temporary crossing. Temporary stream crossings that impede fish passage are strictly prohibited on permanent or seasonal fish-bearing streams.
40.	Cannabis cultivators shall avoid or minimize use of heavy equipment[13] in a watercourse. If use is unavoidable, heavy equipment may only travel or work in a waterbody with a rocky or cobbled channel. Wood, rubber, or clean native rock temporary work pads shall be used on the channel bottom prior to use of heavy equipment to protect channel bed and preserve channel morphology. Temporary work pads and other channel protection shall be removed as soon as possible once the use of heavy equipment is complete.
41.	Cannabis cultivators shall avoid or minimize work in or near a stream, creek, river, lake, pond, or other waterbody. If work in a waterbody cannot be avoided, activities and associated workspace shall be isolated from flowing water by directing the water around the work site. If water is present, then the cannabis cultivator shall develop a site-specific plan prepared by a qualified professional. The plan shall consider partial or full stream diversion and dewatering. The plan shall consider the use of coffer dams upstream and downstream of the work site and the diversion of all flow from upstream of the upstream

[13] Heavy equipment is defined as large pieces of machinery or vehicles, especially those used in the building and construction industry (e.g., bulldozers, excavators, backhoes, bobcats, tractors, etc.).

	dam to downstream of the downstream dam, through a suitably sized pipe with intake screens that protect and prevent impacts to fish and wildlife. Cannabis cultivation activities and associated work shall be performed outside the waterbody from the top of the bank to the maximum extent possible.
Temporary Watercourse Diversion and Dewatering: All Live Watercourses	
42.	Cannabis cultivators shall ensure that coffer dams are constructed prior to commencing work and as close as practicable upstream and downstream of the work area. Cofferdam construction using offsite materials, such as clean gravel bags or inflatable dams, is preferred. Thick plastic may be used to minimize leakage, but shall be completely removed and properly disposed of upon work completion. If the coffer dams or stream diversion fail, the cannabis cultivator shall repair them immediately.
43.	When any dam or other artificial obstruction is being constructed, maintained, or placed in operation, the cannabis cultivator shall allow sufficient water at all times to pass downstream to maintain aquatic life below the dam pursuant to Fish and Game Code section 5937.
44.	If possible, gravity flow is the preferred method of water diversion. If a pump is used, the cannabis cultivator shall ensure that the pump is operated at the rate of flow that passes through the cannabis cultivation site. Pumping rates shall not dewater or impound water on the upstream side of the coffer dam. When diversion pipe is used it shall be protected from cannabis cultivation activities and maintained to prevent debris blockage.
45.	Cannabis cultivators shall only divert water such that water does not scour the channel bed or banks at the downstream end. Cannabis cultivator shall divert flow in a manner that prevents turbidity, siltation, and pollution and provides flows to downstream reaches. Cannabis cultivators shall provide flows to downstream reaches during all times that the natural flow would have supported aquatic life. Flows shall be of sufficient quality and quantity, and of appropriate temperature to support fish and other aquatic life both above and below the diversion. Block netting and intake screens shall be sized to protect and prevent impacts to fish and wildlife.
46.	Once water has been diverted around the work area, cannabis cultivators may dewater the site to provide an adequately dry work area. Any muddy or otherwise contaminated water shall be pumped to a settling tank, dewatering filter bag, or upland area, or to another location approved by CDFW or the appropriate Regional Water Board Executive Officer prior to re-entering the watercourse.
47.	Upon completion of work, cannabis cultivators shall immediately remove the flow diversion structure in a manner that allows flow to resume with a minimum of disturbance to the channel substrate and that minimizes the generation of turbidity.
Watercourse Crossings	
48.	Cannabis cultivators shall ensure that watercourse crossings are designed by a qualified professional.
49.	Cannabis cultivators shall ensure that all access road watercourse crossing structures allow for the unrestricted passage of water and shall be designed to accommodate the

	estimated 100-year flood flow and associated debris (based upon an assessment of the streams potential to generate debris during high flow events). Consult CAL FIRE 100 year Watercourse Crossings document for examples and design calculations, available at: http://calfire.ca.gov/resource_mgt/downloads/100%20yr%20revised%208-08-17%20(final-a).pdf.
50.	Cannabis cultivators shall ensure that watercourse crossings allow migration of aquatic life during all life stages supported or potentially supported by that stream reach. Design measures shall be incorporated to ensure water depth and velocity does not inhibit migration of aquatic life. Any access road crossing structure on watercourses that supports fish shall be constructed for the unrestricted passage of fish at all life stages, and should use the following design guidelines: • CDFW's *Culvert Criteria for Fish Passage;* • CDFW's *Salmonid Stream Habitat Restoration Manual, Volume 2, Part IX: Fish Passage Evaluation at Stream Crossings; and* • National Marine Fisheries Service, Southwest Region *Guidelines for Salmonid Passage at Stream Crossings.*
51.	Cannabis cultivators shall conduct regular inspection and maintenance of stream crossings to ensure crossings are not blocked by debris. Refer to California Board of Forestry Technical Rule No. 5 available at: http://www.calforests.org/wp-content/uploads/2013/10/Adopted-TRA5.pdf.
52.	Cannabis cultivators shall only use rock fords for temporary seasonal crossings on small watercourses where aquatic life passage is not required during the time period of use. Rock fords shall be oriented perpendicular to the flow of the watercourse and designed to maintain the range of surface flows that occur in the watercourse. When constructed, rock shall be sized to withstand the range of flow events that occur at the crossing and rock shall be maintained at the rock ford to completely cover the channel bed and bank surfaces to minimize soil compaction, rutting, and erosion. Rock must extend on either side of the ford up to the break in slope. The use of rock fords as watercourse crossings for all-weather access road use is prohibited.
53.	Cannabis cultivators shall ensure that culverts used at watercourse crossings are designed to direct flow and debris toward the inlet (e.g., use of wing-walls, pipe beveling, rock armoring, etc.) to prevent erosion of road fill, debris blocking the culvert, and watercourses from eroding a new channel.
54.	Cannabis cultivators shall regularly inspect and maintain the condition of access roads, access road drainage features, and watercourse crossings. At a minimum, cannabis cultivators shall perform inspections prior to the onset of fall and winter precipitation and following storm events that produce at least 0.5 in/day or 1.0 inch/7 days of precipitation. Cannabis cultivators are required to perform all of the following maintenance: • Remove any wood debris that may restrict flow in a culvert. • Remove sediment that impacts access road or drainage feature performance. Place any removed sediment in a location outside the riparian setbacks and stabilize the sediment. • Maintain records of access road and drainage feature maintenance and consider

	redesigning the access road to improve performance and reduce maintenance needs.
55.	Cannabis cultivators shall compact access road crossing approaches and fill slopes during installation and shall stabilize them with rock or other appropriate surface protection to minimize surface erosion. When possible, cannabis cultivators shall ensure that access roads over culverts are equipped with a critical dip to ensure that, if the culvert becomes blocked or plugged, water can flow over the access road surface without washing away the fill prism. Access road crossings where specific conditions do not allow for a critical dip or in areas with potential for significant debris accumulation, shall include additional measures such as emergency overflow culverts or oversized culverts that are designed by a qualified professional.
56.	Cannabis cultivators shall ensure that culverts used at watercourse crossings are: 1) installed parallel to the watercourse alignment to the extent possible, 2) of sufficient length to extend beyond stabilized fill/sidecast material, and 3) embedded or installed at the same level and gradient of the streambed in which they are being placed to prevent erosion.
Soil Disposal and Spoils Management	
57.	Cannabis cultivators shall store soil, construction, and waste materials outside the riparian setback except as needed for immediate construction needs. Such materials shall not be stored in locations of known slope instability or where the storage of construction or waste material could reduce slope stability.
58.	Cannabis cultivators shall separate large organic material (e.g., roots, woody debris, etc.) from soil materials. Cannabis cultivators shall either place the large organic material in long-term, upland storage sites, or properly dispose of these materials offsite.
59.	Cannabis cultivators shall store erodible soil, soil amendments, and spoil piles to prevent sediment discharges in storm water. Storage practices may include use of tarps, upslope land contouring to divert surface flow around the material, or use of sediment control devices (e.g., silt fences, straw wattles, etc.).
60.	Cannabis cultivators shall contour and stabilize stored spoils to mimic natural slope contours and drainage patterns (as appropriate) to reduce the potential for fill saturation and slope failure.
61.	For soil disposal sites cannabis cultivators shall: • revegetate soil disposal sites with a mix of native plant species, • cover the seeded and planted areas with mulched straw at a rate of two tons per acre, and • apply non-synthetic netting or similar erosion control fabric (e.g., jute) on slopes greater than 2:1 if the site is erodible.
62.	Cannabis cultivators shall haul away and properly dispose of excess soil and other debris as needed to prevent discharge to waters of the state.

Riparian and Wetland Protection and Management	
63.	Cannabis cultivators shall not disturb aquatic or riparian habitat, such as pools, spawning sites, large wood, or shading vegetation unless authorized under a CWA section 404 permit, CWA section 401 certification, Regional Water Board WDRs (when applicable), or a CDFW LSA Agreement.
64.	Cannabis cultivators shall maintain existing, naturally occurring, riparian vegetative cover (e.g., trees, shrubs, and grasses) in aquatic habitat areas to the maximum extent possible to maintain riparian areas for streambank stabilization, erosion control, stream shading and temperature control, sediment and chemical filtration, aquatic life support, wildlife support, and to minimize waste discharge.
Water Storage and Use	
Water Supply, Diversion, and Storage	
65.	Cannabis cultivators shall only install, maintain, and destroy wells in compliance with county, city, and local ordinances and with California Well Standards as stipulated in California Department of Water Resources Bulletins 74-90 and 74-81.[14]
66.	All water diversions for cannabis cultivation from a surface stream, subterranean stream flowing through a known and definite channel (e.g., groundwater well diversions from subsurface stream flows), or other surface waterbody are subject to the surface water Numeric and Narrative Instream Flow Requirements. This includes lakes, ponds, and springs (unless the spring is deemed exempt by the Deputy Director). See Section 3. Numeric and Narrative Instream Flow Requirements of this Attachment A for more information.
67.	Groundwater diversions may be subject to additional requirements, such as a forbearance period, if the State Water Board determines those requirements are reasonably necessary to implement the purposes of this Policy.
68.	Cannabis cultivators are encouraged to use appropriate rainwater catchment systems to collect from impermeable surfaces (e.g., roof tops, etc.) during the wet season and store storm water in tanks, bladders, or off-stream engineered reservoirs to reduce the need for surface water or groundwater diversions.
69.	Cannabis cultivators shall not divert surface water unless it is diverted in accordance with an existing water right that specifies, as appropriate, the source, location of the point of diversion, purpose of use, place of use, and quantity and season of diversion. Cannabis cultivators shall maintain documentation of the water right at the cannabis cultivation site. Documentation of the water right shall be available for review and inspection by the Water Boards, CDFW, and any other authorized representatives of the Water Boards or CDFW.

[14] California Well Standards are available at: http://www.water.ca.gov/groundwater/well_info_and_other/california_well_standards/well_standards_content.html.

70.	Cannabis cultivators shall ensure that all water diversion facilities are designed, constructed, and maintained so they do not prevent, impede, or tend to prevent the passing of fish, as defined by Fish and Game Code section 45, upstream or downstream, as required by Fish and Game Code section 5901. This includes but is not limited to the supply of water at an appropriate depth, temperature, and velocity to facilitate upstream and downstream aquatic life movement and migration. Cannabis cultivators shall allow sufficient water at all times to pass past the point of diversion to keep in good condition any fish that may be planted or exist below the point of diversion as defined by Fish and Game Code section 5937. Cannabis cultivators shall not divert water in a manner contrary to or inconsistent with these Requirements.
71.	Cannabis cultivators issued a Cannabis SIUR by the State Water Board shall not divert surface water unless in compliance with all additional Cannabis SIUR conditions required by CDFW.
72.	Water diversion facilities shall include satisfactory means for bypassing water to satisfy downstream prior rights and any requirements of policies for water quality control, water quality control plans, water quality certifications, waste discharge requirements, or other local, state or federal instream flow requirements. Cannabis cultivators shall not divert in a manner that results in injury to holders of legal downstream senior rights. Cannabis cultivators may be required to curtail diversions should diversion result in injury to holders of legal downstream senior water rights or interfere with maintenance of downstream instream flow requirements.
73.	Fuel powered (e.g., gas, diesel, etc.) diversion pumps shall be located in a stable and secure location outside of the riparian setbacks unless authorized under a 404/401 CWA permits, a CDFW LSA Agreement, coverage under the Cannabis General Order water quality certification, or site-specific WDRs issued by the Regional Water Board. Use of non-fuel powered diversion pumps (solar, electric, gravity, etc.) is encouraged. In all cases, all pumps shall: 1. be properly maintained, 2. have suitable containment to ensure any spills or leaks do not enter surface waterbodies or groundwater, and 3. have sufficient overhead cover to prevent exposure of equipment to precipitation.
74.	No water shall be diverted unless the cannabis cultivator is operating the water diversion facility with a CDFW-approved water-intake screen (e.g. fish screen). The water intake screen shall be designed and maintained in accordance with screening criteria approved by CDFW. The screen shall prevent wildlife from entering the diversion intake and becoming entrapped. The cannabis cultivator shall contact the regional CDFW Office, LSA Program for information on screening criteria for diversion(s).[15] The cannabis cultivator shall provide evidence that demonstrates that the water intake screen is in good condition whenever requested by the Water Boards or CDFW. Points of re-diversion from off-stream storage facilities that are open to the environment shall have a water intake screen, as required by CDFW.

[15] CDFW's Lake and Streambed program information is available at: https://www.wildlife.ca.gov/Conservation/LSA .

75.	Cannabis cultivators shall inspect, maintain, and clean water intake screens and bypass appurtenances as directed by CDFW to ensure proper operation for the protection of fish and wildlife.
76.	Cannabis cultivators shall not obstruct, alter, dam, or divert all or any portion of a natural watercourse prior to obtaining all applicable permits and approvals. Permits may include a valid water right, 404/401 CWA permits, a CDFW LSA Agreement, coverage under the Cannabis General Order water quality certification, or site-specific WDRs issued by the Regional Water Board.
77.	Cannabis cultivators shall plug, block, cap, disconnect, or remove the diversion intake associated with cannabis cultivation activities during the surface water forbearance period, unless the diversion intake is used for other beneficial uses, to ensure no water is diverted during that time.
78.	Cannabis cultivators shall not divert from a surface water or from a subterranean stream for cannabis cultivation at a rate more than a maximum instantaneous diversion rate of 10 gallons per minute, unless authorized under an existing appropriative water right.
82.	Onstream storage reservoirs are prohibited unless either: • The cannabis cultivator has an existing water right with irrigation as a designated use, issued prior to October 31, 2017, that authorizes the onstream storage reservoir, or • The cannabis cultivator obtains an appropriative water right permit with irrigation as a designated use prior to diverting water from an onstream storage reservoir for cannabis cultivation. Cannabis cultivators with a pending application or an unpermitted onstream storage reservoir shall not divert for cannabis cultivation until the cannabis cultivator has obtain a valid water right.
83.	Cannabis cultivators are encouraged to install separate storage systems for water diverted for cannabis irrigation and water diverted for any other beneficial uses,[16] or otherwise shall install separate measuring devices to quantify diversion to and from each storage facility, including the quantity of water diverted and the quantity, place, and purpose of use (e.g., cannabis irrigation, other crop irrigation, domestic, etc.) for the stored water.
84.	The cannabis cultivator shall install and maintain a measuring device(s) for surface water or subterranean stream diversions. The measuring device shall be, at a minimum equivalent to the requirements for direct diversions greater than 10 acre-feet per year in California Code of Regulations, Title 23, Division 3, Chapter 2.7[17]. The measuring device(s) shall be located as close to the point of diversion as reasonable. Cannabis cultivators shall maintain daily diversion records for water diverted for cannabis cultivation.

[16] Other beneficial uses of water include: domestic, irrigation, power, municipal, mining, industrial, fish and wildlife preservation and enhancement, aquaculture, recreational, stockwatering, water quality, frost protection, and heat control. (California Code of Regulations, Title 23 sections 659-672).

[17] Additional information on measuring devices may be found at: https://www.waterboards.ca.gov/waterrights/water_issues/programs/diversion_use/water_use.shtml#measurement

	Cannabis cultivators shall maintain separate records that document the amount of water used for cannabis cultivation separated out from the amount of water used for other irrigation purposes and other beneficial uses of water (e.g., domestic, fire protection, etc.). Cannabis cultivators shall maintain daily diversion records at the cultivation site and shall make the records available for review or by request by the Water Boards CDFW, or any other authorized representatives of the Water Boards or CDFW. Daily diversion records shall be retained for a minimum of five years. Compliance with this term is required for any surface water diversion for cannabis cultivation, even those under 10 acre-feet per year.
85.	The State Water Board intends to develop and implement a basin-wide program for real-time electronic monitoring and reporting of diversions, withdrawals, releases and streamflow in a standardized format if and when resources become available. Such real-time reporting will be required upon a showing by the State Water Board that the program and the infrastructure are in place to accept real-time electronic reports. Implementation of the reporting requirements shall not necessitate amendment to this Requirement.
86.	Cannabis cultivators shall not use off-stream storage reservoirs and ponds to store water for cannabis cultivation unless they are sited and designed or approved by a qualified professional in compliance with Division of Safety of Dams (DSOD), county, and/or city requirements, as applicable. If the DSOD, county, and/or city do not have established requirements they shall be designed consistent with the Natural Resource Conservation Service National Engineering Manual. Reservoirs shall be designed with an adequate overflow outlet that is protected and promotes the dispersal and infiltration of flow and prevents channelization. All off-stream storage reservoirs and ponds shall be designed, managed, and maintained to accommodate average annual winter period precipitation and storm water inputs to reduce the potential for overflow. Cannabis cultivators shall plant native vegetation along the perimeter of the reservoir in locations where it does not impact the structural integrity of the reservoir berm or spillway. The cannabis cultivator shall control vegetation around the reservoir berm and spillway to allow for visual inspection of berm and spillway condition and control burrowing animals as necessary.
87.	Cannabis cultivators shall implement an invasive species management plan prepared by a Qualified Biologist for any existing or proposed water storage facilities that are open to the environment. The plan shall include, at a minimum, an annual survey for bullfrogs and other invasive aquatic species. If bullfrogs or other invasive aquatic species are identified, eradication measures shall be implemented under the direction of a qualified biologist, if appropriate after consultation with CDFW (pursuant to Fish and Game Code section 6400). Eradication methods can be direct or indirect. Direct methods may include hand-held dip net, hook and line, lights, spears, gigs, or fish tackle under a fishing license (pursuant to Fish and Game Code section 6855). An indirect method may involve seasonally timed complete dewatering and a drying period of the off-stream storage facility under a Permit to Destroy Harmful Species (pursuant to Fish and Game Code section 5501) issued by CDFW.
88.	Water storage bladders are not encouraged for long-term use. If bladders are used, the cannabis cultivator shall ensure that the bladder is designed and properly installed to store water and that the bladder is sited to minimize the potential for water to flow into a

	watercourse in the event of a catastrophic failure. If a storage bladder has been previously used, the cannabis cultivator shall carefully inspect the bladder to confirm its integrity and confirm the absence of any interior residual chemicals prior to resuming use. Cannabis cultivators shall periodically inspect water storage bladders and containment features to ensure integrity. Water storage bladders shall be properly disposed of or recycled and not resold when assurance of structural integrity is no longer guaranteed.
89.	Cannabis cultivators shall not use water storage bladders unless the bladder is safely contained within a secondary containment system with sufficient capacity to capture 110 percent of a bladder's maximum possible contents in the event of bladder failure (i.e., 110 percent of bladder's capacity). Secondary containment systems shall be of sufficient strength and stability to withstand the forces of released contents in the event of catastrophic bladder failure. In addition, secondary containment systems that are open to the environment shall be designed and maintained with sufficient capacity to accommodate precipitation and storm water inputs from a 25-year, 24-hour storm event.
90.	Cannabis cultivators shall not cause or allow any overflow from off-stream water storage facilities that are closed to the environment (e.g., tanks and bladders) if the off-stream facilities are served by a diversion from surface water or groundwater. Cannabis cultivators shall regularly inspect for and repair all leaks of the diversion and storage system.
91.	Water storage tanks, bladders, and other off-stream water storage facilities that are closed to the environment shall not be located in a riparian setback or next to equipment that generates heat. Cannabis cultivators shall place water storage tanks, bladders, and other off-stream water storage facilities that are closed to the environment in areas that allow for ease of installation, access, maintenance, and minimize road development.
92.	Cannabis cultivators shall install vertical and horizontal tanks according to manufacturer's specifications and shall place tanks on properly compacted soil that is free of rocks and sharp objects and capable of bearing the weight of the tank and its maximum contents with minimal settlement. Tanks shall not be located in areas of slope instability. Cannabis cultivators shall install water storage tanks capable of containing more than 8,000 gallons only on a reinforced concrete pad providing adequate support and enough space to attach a tank restraint system (anchor using the molded-in tie down lugs with moderate tension, being careful not to over-tighten) per the recommendations of a qualified professional.
93.	To prevent rupture or overflow and runoff, cannabis cultivators shall only use water storage tanks and bladders equipped with a float valve, or equivalent device, to shut off diversion when storage systems are full. Cannabis cultivators shall install any other measures necessary to prevent overflow of storage systems to prevent runoff and the diversion of more water than can be used and/or stored.
94.	Cannabis cultivators shall ensure that all vents and other openings on water storage tanks are designed to prevent the entry and/or entrapment of wildlife.

95.	Cannabis cultivators shall retain, for a minimum of five years, appropriate documentation for any hauled water[18] used for cannabis cultivation. Documentation for hauled water shall include, for each delivery, all of the following: 1. A receipt that shows the date of delivery and the name, address, license plate number, and license plate issuing state for the water hauler, 2. A copy of the Water Hauler's License (California Health and Safety Code section 111120), 3. A copy of proof of the Water Hauler's water right, groundwater well, or other authorization to take water, and the location of the water source, and 4. The quantity of water delivered or picked up from a water source, in gallons. Documentation shall be made available, upon request, to Water Boards or CDFW staff and any other authorized representatives of the Water Boards or CDFW.
Water Conservation and Use	
96.	Cannabis cultivators shall regularly inspect their entire water delivery system for leaks and immediately repair any leaky faucets, pipes, connectors, or other leaks.
97.	Cannabis cultivators shall use weed-free mulch in cultivation areas that do not have ground cover to conserve soil moisture and minimize evaporative loss.
98.	Cannabis cultivators shall implement water conserving irrigation methods (e.g., drip or trickle irrigation, micro-spray, or hydroponics).
99.	Cannabis cultivators shall maintain daily records of all water used for irrigation of cannabis. Daily records may be calculated by the use of a measuring device or, if known, by calculating the irrigation system rates and duration of time watered (e.g., irrigating for one hour twice per day using 50 half-gallon drips equates to 50 gallons per day (1*2*50*0.5) of water used for irrigation). Cannabis cultivators shall retain, for a minimum of 5 years, irrigation records at the cannabis cultivation site and shall make all irrigation records available for review by the Water Boards, CDFW and any other authorized representatives of the Water Boards or CDFW.
Irrigation Runoff	
100.	Cannabis cultivators shall regularly inspect for leaks in mainlines[19], laterals[20], in irrigation connections, sprinkler heads, or at the ends of drip tape and feeder lines and immediately repair any leaks found upon detection.
101.	The irrigation system shall be designed to include redundancy (e.g., safety valves) in the event that leaks occur, so that waste of water and runoff is prevented and minimized.
102.	Cannabis cultivators shall regularly replace worn, outdated, or inefficient irrigation system components and equipment to ensure a properly functioning, leak-free irrigation system at

[18] Water hauler means any person who hauls water in bulk by any means of transportation.
[19] Mainlines are pipes that go from the water source to the control valves.
[20] Laterals are the pipes between the control valve and the sprinkler heads.

	all times.
103.	Cannabis cultivators shall minimize irrigation deep percolation[21] by applying irrigation water at agronomic rates.
Fertilizers, Pesticides, and Petroleum Products	
104.	Cannabis cultivators shall not mix, prepare, over apply, or dispose of agricultural chemicals/products (e.g., fertilizers, pesticides[22], and other chemicals as defined in the applicable water quality control plan) in any location where they could enter the riparian setback or waters of the state. The use of agricultural chemicals inconsistently with product labeling, storage instructions, or DPR requirements for pesticide applications[23] is prohibited. Disposal of unused product and containers shall be consistent with labels.
105.	Cannabis cultivators shall keep and use absorbent materials designated for spill containment and spill cleanup equipment on-site for use in an accidental spill of fertilizers, petroleum products, hazardous materials, and other substances which may degrade waters of the state. The cannabis cultivator shall immediately notify the California Office of Emergency Services at 1-800-852-7550 and immediately initiate cleanup activities for all spills that could enter a waterbody or degrade groundwater.
106.	Cannabis cultivators shall establish and use a separate storage area for pesticides, and fertilizers, and another storage area for petroleum or other liquid chemicals (including diesel, gasoline, oils, etc.). All such storage areas shall comply with the riparian setback Requirements, be in a secured location in compliance with label instructions, outside of areas of known slope instability, and be protected from accidental ignition, weather, and wildlife. All storage areas shall have appropriate secondary containment structures, as necessary, to protect water quality and prevent spillage, mixing, discharge, or seepage.

[21] Deep percolation occurs when excess irrigation water is applied and percolates below the plant root zone.

[22] Pesticide is defined as follows:

- Per California Code of Regulations Title 3. Division 6. Section 6000:
  (a) Any substance or mixture of substances that is a pesticide as defined in the Food and Agricultural Code and includes mixtures and dilutions of pesticides;
  (b) As the term is used in Section 12995 of the California Food and Agricultural Code, includes any substance or product that the user intends to be used for the pesticidal poison purposes specified in Sections 12753 and 12758 of the Food and Agricultural Code.
- Per California Food and Agricultural Code section 12753(b), the term "Pesticide" includes any of the following: Any substance, or mixture of substances which is intended to be used for defoliating plants, regulating plant growth, or for preventing, destroying, repelling, or mitigating any pest, as defined in Section 12754.5, which may infest or be detrimental to vegetation, man, animals, or households, or be present in any agricultural or nonagricultural environment whatsoever.
- In laymen's terms: "pesticide" includes: rodenticides, herbicides, insecticides, fungicides, and disinfectants.

[23] More information on DPR requirements is available at:
http://www.cdpr.ca.gov/docs/legbills/laws_regulations.htm,
http://www.cdpr.ca.gov/docs/county/cacltrs/penfltrs/penf2017/2017atch/attach0301.pdf, and
http://www.cdpr.ca.gov/docs/cannabis/index.htm

	Storage tanks and containers must be of suitable material and construction to be compatible with the substances stored and conditions of storage, such as pressure and temperature.
107.	Throughout the wet season, Cannabis Cultivators shall ensure that any temporary storage areas have a permanent cover and side-wind protection or be covered during non-working days and prior to and during rain events.
108.	Cannabis cultivators shall only use hazardous materials[24] in a manner consistent with the product's label.
109.	Cannabis cultivators shall only keep hazardous materials in their original containers with labels intact, and shall store hazardous materials to prevent exposure to sunlight, excessive heat, and precipitation. Cannabis cultivators shall provide secondary containment for hazardous materials to prevent possible exposure to the environment. Disposal of unused hazardous materials and containers shall be consistent with the label.
110.	Cannabis cultivators shall only mix, prepare, apply, or load hazardous materials outside of the riparian setbacks.
111.	Cannabis cultivators shall not apply agricultural chemicals within 48 hours of a predicted rainfall event of 0.25 inches or greater with a probability greater than 50-percent. In the Lake Tahoe Hydrologic Unit, cannabis cultivators shall not apply agricultural chemicals within 48 hours of any weather pattern that is forecast to have a 30 percent or greater chance of precipitation greater than 0.1 inch per 24 hours. This requirement may be updated based on amendments to the Lahontan Regional Water Board construction storm water general order.
Fertilizers and Soils	
112.	To minimize infiltration and water quality degradation, Cannabis cultivators shall irrigate and apply fertilizer to consistent with the crop need (i.e., agronomic rate).
113.	When used, cannabis cultivators shall apply nitrogen to cannabis cultivation areas consistent with crop need (i.e., agronomic rate). Cannabis cultivators shall not apply nitrogen at a rate that may result in a discharge to surface water or groundwater that causes or contributes to exceedance of water quality objectives, and no greater than 319 pounds/acre/year unless plant tissue analysis performed by a qualified individual demonstrates the need for additional nitrogen application. The analysis shall be performed by an agricultural laboratory certified by the State Water Board's Environmental Laboratory Accreditation Program.
114.	Cannabis cultivators shall ensure that potting soil or soil amendments, when not in use, are placed and stored with covers, when needed, to protect from rainfall and erosion, to prevent discharge to waters of the state, and to minimize leaching of waste constituents into

[24] A hazardous material is any item or agent (biological, chemical, radiological, and/or physical), which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors.

	groundwater.
Pesticides and Herbicides	
115.	Cannabis cultivators shall not apply restricted materials, including restricted pesticides, or allow restricted materials to be stored at the cannabis cultivation site.
116.	Cannabis cultivators shall implement integrated pest management strategies where possible to reduce the need and use of pesticides and the potential for discharges to waters of the state.[25]
Petroleum Products and Other Chemicals	
117.	Cannabis cultivators shall only refuel vehicles or equipment outside of riparian setbacks. Cannabis cultivators shall inspect all equipment using oil, hydraulic fluid, or petroleum products for leaks prior to use and shall monitor equipment for leakage. Stationary equipment (e.g., motors, pumps, generators, etc.) and vehicles not in use shall be located outside of riparian setbacks. Spill and containment equipment (e.g., oil spill booms, sorbent pads, etc.) shall be stored onsite at all locations where equipment is used or staged.
118.	Cannabis cultivators shall store petroleum, petroleum products, and similar fluids in a manner that provides chemical compatibility, provides secondary containment, and protection from accidental ignition, the sun, wind, and rain.
119.	Use of an underground storage tank(s) for the storage of petroleum products is allowed if compliant with all applicable federal, state, and local laws; regulations; and permitting requirements.
Cultivation-Related Waste	
120.	Cannabis cultivators shall contain and regularly remove all debris and trash associated with cannabis cultivation activities from the cannabis cultivation site. Cannabis cultivators shall only dispose of debris and trash at an authorized landfill or other disposal site in compliance with state and local laws, ordinances, and regulations. Cannabis cultivators shall not allow litter, plastic, or similar debris to enter the riparian setback or waters of the state. Cannabis plant material may be disposed of onsite in compliance with any applicable CDFA license conditions.
121.	Cannabis cultivators shall only dispose or reuse spent growth medium (e.g., soil and other organic media) in a manner that prevents discharge of soil and residual nutrients and chemicals to the riparian setback or waters of the state. Spent growth medium shall be covered with plastic sheeting or stored in water tight dumpsters prior to proper disposal or reuse. Spent growth medium should be disposed of at an authorized landfill or other disposal site in compliance with state and local laws, ordinances, and regulations. Proper reuse of spent growth medium may include incorporation into garden beds or spreading on a stable surface and revegetating the surface with native plants. Cannabis cultivators shall use erosion control techniques, as needed, for any reused or stored spent growth medium

[25] https://www.epa.gov/safepestcontrol/integrated-pest-management-ipm-principles

	to prevent polluted runoff.
Refuse and Domestic Waste	
122.	Cannabis cultivators shall ensure that debris, soil, silt, bark, slash, sawdust, rubbish, creosote-treated wood, raw cement and concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to any life stage of fish and wildlife or their habitat (includes food sources) does not contaminate soil or enter the riparian setback or waters of the state.
123.	Cannabis cultivators shall not dispose of domestic wastewater unless it meets applicable local agency and/or Regional Water Board requirements. Cannabis cultivators shall ensure that human or animal waste is disposed of properly. Cannabis cultivators shall ensure onsite wastewater treatment systems (e.g., septic system) are permitted by the local agency or applicable Regional Water Board.
124.	If used, chemical toilets or holding tanks shall be maintained in a manner appropriate for the frequency and conditions of usage, sited in stable locations, and comply with the riparian setback Requirements.
Winterization	
125.	Cannabis cultivators shall implement all applicable Erosion Control and Soil Disposal and Spoils Management Requirements in addition to the Winterization Requirements below by the onset of the winter period.
126.	Cannabis cultivators shall block or otherwise close any temporary access roads to all motorized vehicles no later than the onset of the winter period each year.
127.	Cannabis cultivators shall not operate heavy equipment of any kind at the cannabis cultivation site during the winter period, unless authorized for emergency repairs contained in an enforcement order issued by the State Water Board, Regional Water Board, or other agency having jurisdiction.
128.	Cannabis cultivators shall apply linear sediment controls (e.g., silt fences, wattles, etc.) along the toe of the slope, face of the slope, and at the grade breaks of exposed slopes to comply with sheet flow length[26] at the frequency specified below.

Slope (percent)	Sheet Flow Length Not to Exceed (feet)
0 – 25	20
25 – 50	15
>50	10

[26] Sheet flow length is the length that shallow, low velocity flow travels across a site.

129.	Cannabis cultivators shall maintain all culverts, drop inlets, trash racks and similar devices to ensure they are not blocked by debris or sediment. The outflow of culverts shall be inspected to ensure erosion is not undermining the culvert. Culverts shall be inspected prior to the onset of fall and winter precipitation and following precipitation events that produce at least 0.5 in/day or 1.0 inch/7 days of precipitation to determine if maintenance or cleaning is required.
130.	Cannabis cultivators shall stabilize all disturbed areas and construction entrances and exits to control erosion and sediment discharges from land disturbance.
131.	Cannabis cultivators shall cover and berm all loose stockpiled construction materials (e.g., soil, spoils, aggregate, etc.) that are not actively (scheduled for use within 48 hours) being used as needed to prevent erosion by storm water. The cannabis cultivator shall have adequate cover and berm materials available onsite if the weather forecast indicates a probability of precipitation.
132.	Cannabis cultivators shall apply erosion repair and control measures to the bare ground (e.g., cultivation area, access paths, etc.) to prevent discharge of sediment to waters of the state.
133.	As part of the winterization plan approval process, the Regional Water Board may require cannabis cultivators to implement additional site-specific erosion and sediment control requirements if the implementation of the Requirements in this section do not adequately protect water quality.