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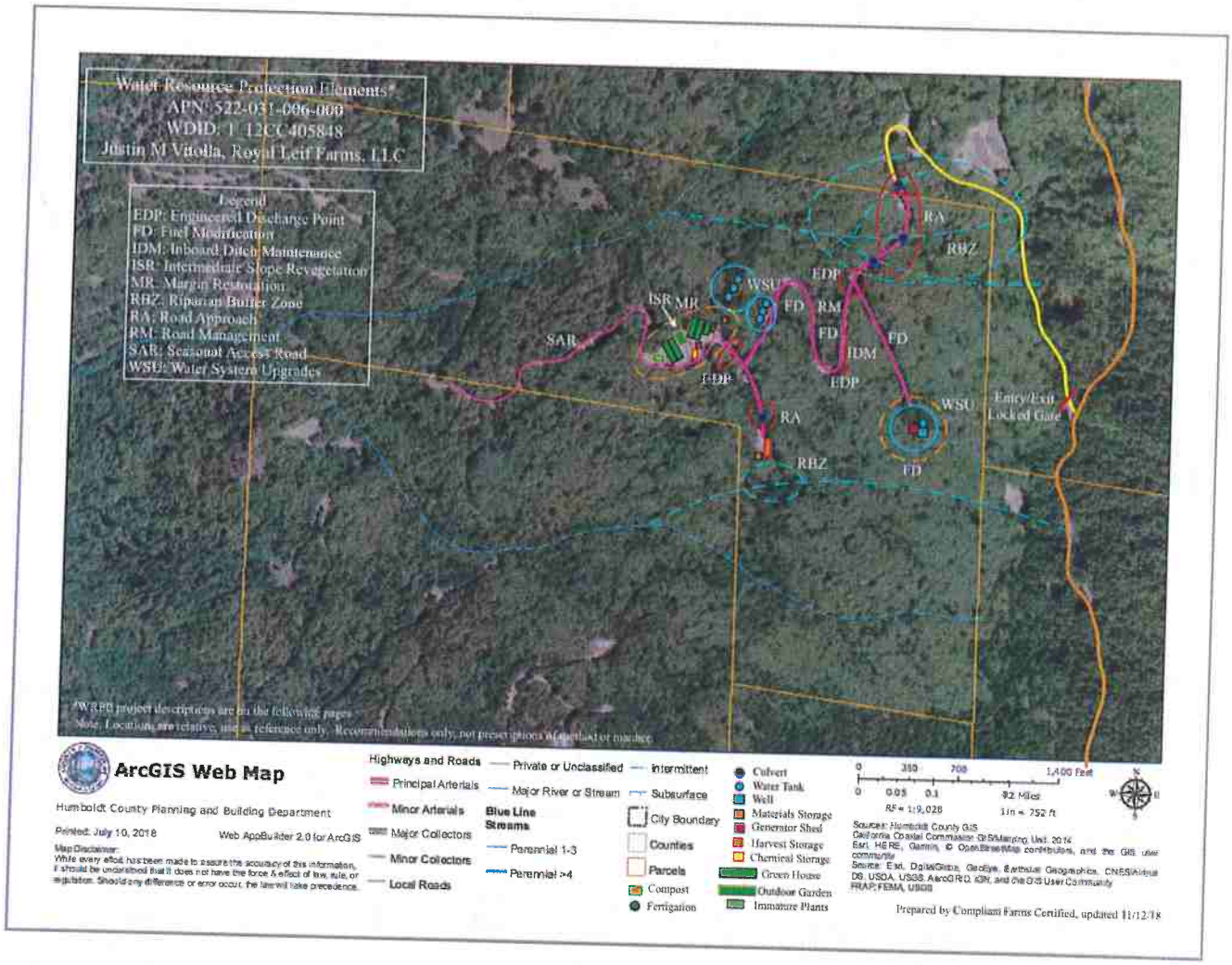


Cannabis Waste and Discharge Compliance Report

Prepared for: Justin Vitolla, Royal Leif Farms, LLC.
APN: 522-031-006-000
Order No. R1-2015-0023 WDID: 1B16661CHUM
WQ-2017-0023-DWQ WDID: 1_12CC405848
Humboldt County, CA
Prepared by: Dan Mar, CPD
Compliant Farms Certified
Updated December 2, 2019

COVER LETTER

Existing Water Resource Protection Plan

Implemented under ORDER No. R1-2015-0023, the Region 1 State Water Resources Control Board's Cannabis Cultivation Policy required that all Tier 1 and 2 Dischargers submit and implement a Water Resources Protection Plan (WRPP) that describes how best management practices (BMPs) would be implemented at the site for each of the outlined Standard Conditions contained in the order.

The subject parcel was enrolled in R1-2015-0023 and working under a preexisting WRPP. The following updated WRPP will serve to fulfill the new requirements under ORDER WQ 2017-0023-DWQ, the State Water Resources Control Board's Cannabis Cultivation Policy which requires that all Tier 2 Dischargers submit and implement a Site Management Plan (SMP) that describes how best practical treatment or control (BPTC) measures are implemented at the site.

Table of Contents

Site Management Plan Details

- The following plan includes descriptions for each Standard Condition and each applicable subsection.
- Each applicable subsection includes recommendations for Best Management Practices (BMPs) and Best Practical Treatment or Control (BPTC) measures.
- Each applicable subsection includes Monitoring and Maintenance, Design, Winterization and Permanent Strategies to achieve compliance with the Standard Conditions.
- Each applicable subsection includes an action priority and expected completion date to achieve compliance.
- Attachments are included to support the BMP and BPTC measures.

Existing Project

- The project is located in Humboldt County, in the Supply Creek, tributary to the Trinity River, on the north side of State Highway 299, approximately 6.2-miles from the intersection of Three Creeks Rd and State Highway 299, on the property known to be in Township 07 North, Range 4 East, Humboldt Base and Meridian, Willow Creek USGS.
- Local Jurisdiction: Zoning Clearance Certificate for Interim Permit pursuant to the Humboldt County Commercial Medical Marijuana Land Use Ordinance (CMMLUO), Section 314-55.4.1 et seq., specifically Section 314-55.4.8.11, a Zoning Clearance Certificate for an interim Permit may be issued for an Existing Cannabis Cultivation and ancillary activities of existing outdoor cultivation; Apps: 11947
- State Licensing: California Department of Food and Agriculture, Division of CalCannabis Provisional Cannabis Cultivation License: CML18-0003322 and CML18-0003323.
- California Department of Fish and Wildlife: Streambed Alteration Agreement Notification No. 1600-2018-0697-R1.
- Water Source: State of California, Division of Water Rights: Well 07N/04E-30.

Web Soil Survey

According to the Natural Resources Conservation Service's Web Soil Service, the site's soil type is identified as:

Feature	446	463	473
Slope	15-50%	30-75%	9-50%
Depth to restrictive feature	>80-inches	>80-inches	>80-inches
Natural drainage class	Well Drained	Well Drained	Well Drained
Capacity to transmit water	Mod. High to High	Mod. Low to Mod. High	Mod. Low to Mod. High
Depth to water table	>80-inches	>80-inches	>80-inches
Frequency of flooding	None	None	None
Frequency of ponding	None	None	None
Available water storage in profile	Moderate, 7.5-inches	High, 9.4-inches	High, 9.3-inches

See attached Soil Map, Map Unit Legend and Map Unit Descriptions.

Attachements

- Water Resource Protection Elements Site Map and Descriptions
- Water Resource Protection Plan: Standard Conditions Compliance Requirements
- Best Practical Treatments and Controls Site Map and Acronyms
- Site Management Plan: Best Practical Treatments and Controls
- Monitoring Timeline and Data Log
- Cultivation Activities Product Descriptions and Pest Management Plan
- Cannabis Waste Management Plan
- Solid and Hazardous Waste Management Plan
- Soil Map, Map Unit Legend and Map Unit Descriptions
- SWRCB_WQ20170023DWC_Sec.2: Requirements and Best Practical Treatment and Control (BPTC) related to water diversions and waste discharge for cannabis cultivation.
- ORDER No. R1-2015-0023 Best Management Practices (BMP) for Site Maintenance and Operations
- Winterization Protocols for the Statewide Cannabis Order
- Various BMP and BPTC Documents

EXECUTIVE SUMMARY

ORDER No. R1-2015-0023 Site Characteristics

1. Site Maintenance, Erosion Control and Drainage Features
   i. Road Maintenance and Other Corridors

   A 6.20-mile gravel and dirt road accesses the project site from State Highway 299. The first 4.4-miles is a county maintained road. The remaining 1.8miles is a road association maintained road that is well draining with sufficient radius turns and stable margins and is graded annually. Leaving the community road is a short section of easement road through a neighboring parcel with two stream crossings. On the subject parcel there are three stream crossing. All private road sections are well maintained, graded annually and monitored for functionality.

   ii. Discharge Points

   Discharge points along the access roads are in good working condition and are maintained during the wet-season. Some upgrades are required.

   iii. Hydrologic Disconnection

   Regular road maintenance ensures that discharge is hydrologically disconnected from surface waters. Developed and cultivated sites are maintained and native vegetation along the margins is encourage. Winterization protocols are deployed prior to the wet-season to maintain hydrologic disconnection.

   iv. Stockpiled Materials

   Materials are secured for the wet-season.

2. Stream Crossing Maintenance
   i. C1-C4

   All four culverts were installed per an existing Lake and Streambed Alteration Agreement. They are in excellent working condition.

3. Riparian and Wetland Protection and Management
   i. Cultivation Site

   Site meets minimum setbacks from surface water, is hydrologically disconnected and has well vegetated margins.

4. Spoils Management

   Vegetative material is composted onsite, contained and set at a sufficient distance from surface water. Soil is reused within existing cultivation areas.

5. Water Storage and Use

   i. Well

   Installed and operated under a completed well report and permit. Power for the pump is presently sourced from a gas generator with plans for solar power in 2020.

   ii. WS1-WS3

   Rigid storage is sited upslope of cultivation area to utilize gravity for conveyance.

6. Irrigation Runoff

   There is no runoff associated with irrigation. Irrigation system is maintained regularly to avoid leaks. Irrigation is done manually to avoid over watering and thus the discharge of nutrients. Soils are amended during the off-season to enhance the organic content and thus the water holding capacity. Soils are mulched and margins of cultivations sites are vegetated.

7. Fertilizers and Soil Amendments

   Fertilizers and soil amendments are stored when not in use and applied per manufactures recommendations. Operation employs a living-soils style of cultivation utilizing compost, cover-crops and biology to provide plants with nutrition. Soil nutrient tests are conducted regularly to avoid overfeeding.

8. Pesticides and Herbicides

   No restricted commercial pesticides or herbicides are used. Operation employs the use of compost teas and companion planting as part of an integrated pest management plan.

9. Petroleum Products and Other Chemicals

   Petroleum products are present for the purpose of property management. and power generation. They are stored in a secure location with secondary containment.

10. Cultivation Related Wastes

    Vegetative material is composted onsite, contained and set at a sufficient distance from surface water. Soil is reused within existing cultivation areas.

11. Refuse and Human Waste

Refuse is taken off-site on a regular basis to a licensed municipal waste facility. A certified portable toilet is onsite and maintained monthly. A Suitability Assessment and subsequent design for an OWTS has been completed.

ORDER WQ 2017-0023-DWQ Site Characteristics

The following summary addresses standard conditions not addressed in the preceding summary under Order No. R1-2015-0023.

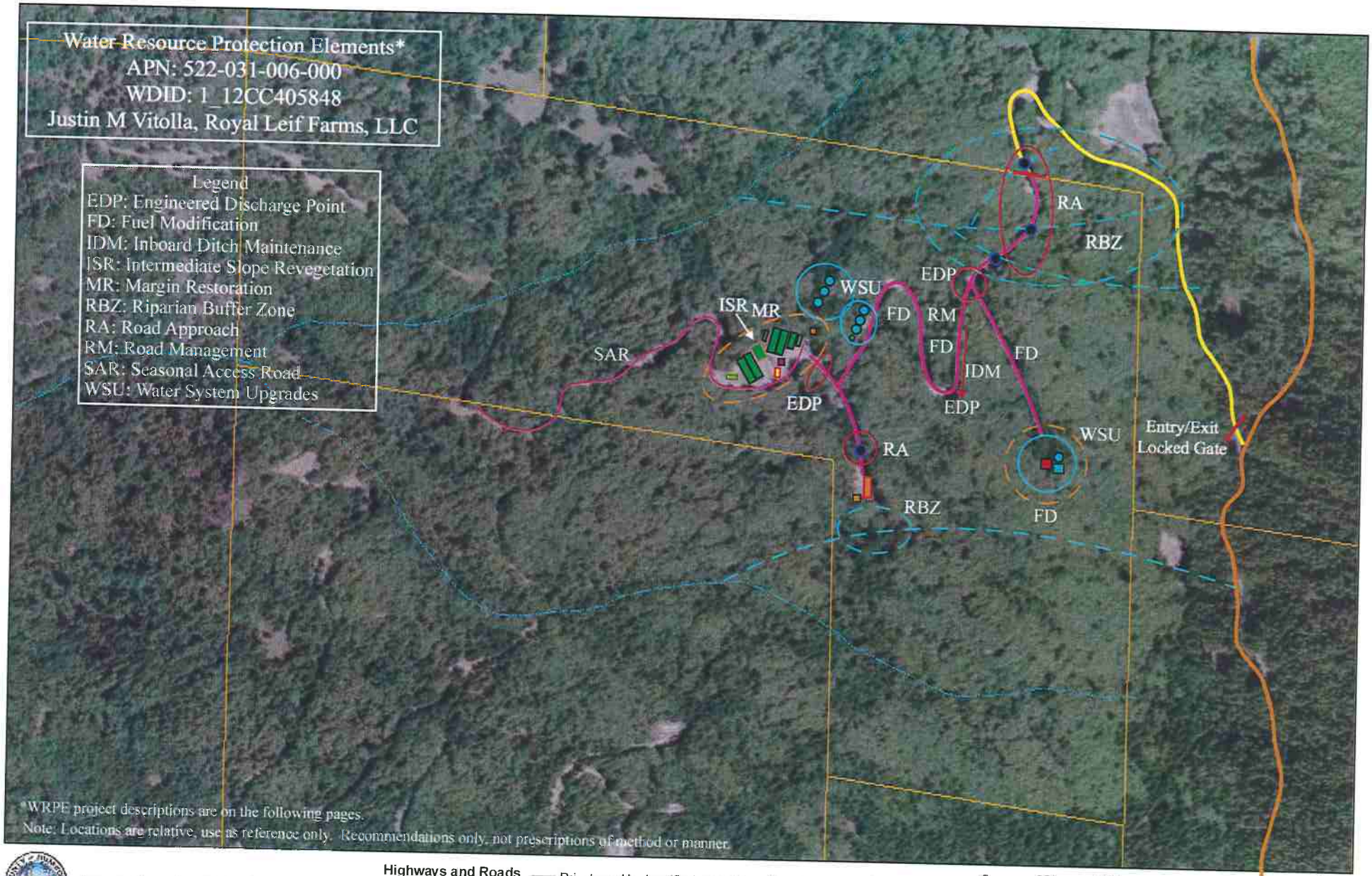
1.1.3.1. Legacy Discharge Issues

There are no legacy discharge issues associated with this project.

5. Winterization Measures

See attached Standard Conditions Compliance Requirements Table for a complete list of winterization recommendations for each Standard Condition.

Appendix



ArcGIS Web Map

Humboldt County Planning and Building Department

Printed: July 10, 2018 Web AppBuilder 2.0 for ArcGIS

Map Disclaimer:
While every effort has been made to assure the accuracy of this information, it should be understood that it does not have the force & effect of law, rule, or regulation. Should any difference or error occur, the law will take precedence.

Highways and Roads
- Principal Arterials
- Minor Arterials
- Major Collectors
- Minor Collectors
- Local Roads
- Private or Unclassified
- Major River or Stream

Blue Line Streams
- Perennial 1-3
- Perennial >4
- Intermittent
- Subsurface
- City Boundary
- Counties
- Parcels
- Compost
- Fertigation
- Culvert
- Water Tank
- Well
- Materials Storage
- Generator Shed
- Harvest Storage
- Chemical Storage
- Green House
- Outdoor Garden
- Immature Plants

0 350 700 1,400 Feet
0 0.05 0.1 0.2 Miles
RF= 1:9,028 1 in = 752 ft

N W E S

Sources: Humboldt County GIS
California Coastal Commission GIS/Mapping Unit, 2014
Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
FRAP, FEMA, USGS

Prepared by Compliant Farms Certified, updated 11/12/18

Recommendations for Identified Water Resources Protection Elements

Overview
The following recommendations are based on site specific conditions related to the management of waste discharge and water resources on cannabis farms in upland watersheds. The intention of these design elements is to protect water quality while enhancing ecologic resources.

Engineered Discharge Points (EDP)
The discharge points of roads (rolling dips, outsloping, inboard ditches) require protected points of discharge to prevent the sedimentation of surface waters and promote the recharge of groundwater supplies. Rolling dips are wide, broad humps that facilitate the discharge of stormwater from roads and flats. The wide, broad design prevents stormwater from concentrating by matching the sheet flow from the drainage area. Inboard ditches in conjunction with cross-drains (ditch relief culverts) must be sized to facilitate localized storm events. Discharge points must include armoring, velocity dissipators and vegetation to promote the infiltration of runoff. The discharge point should be integrated with some form of groundwater recharge system.

Fuel Modification (FD)
The identified forested area runs along the main access road that is a point of ignition. The road margin requires fuel modification (see specific agency requirements governing the specs). Activities should be conducted in such a way so as to promote a healthy forest margin of understory species as well as promoting infiltration and slope stabilization from slope runoff. The processing of modification byproducts (branches, shrubs, etc.) should be an integrated approach that mimics natural forest processes such as fire and carbon sequestration as well as the infiltration of rainwater which is a key component in recharging groundwater supplies that can have positive, cumulative effects on forest health and in-stream flows.

Inboard Ditch Maintenance (IDM)
Inboard ditches are designed to concentrate runoff from roads and convey it to appropriate points of discharge. By nature, concentrated flows of runoff are erosive and many discharge points of inboard ditches are at stream crossings where sediment can pose a threat to water quality. All inboard ditches must be routinely maintained in preparation for the wet-season and at regular intervals during the wet-season. Strategies for maintaining inboard ditches are: remove built up sediment deposits and debris to maintain hydrologic function, instal check dams to dissipate velocity and trap sediment within the ditch, assess cross-drains to ensure function, instal velocity dissipators and enhance areas of infiltration at the discharge point of cross-drains and ditches to protect slopes and streams.

Intermediate Slope Revegetation (ISR)
Excavation activities and development have resulted in exposed slopes and fill prisms that are prone to erosion. Restoration includes, but is not limited to: contouring slope grade, facilitation of discharge and infiltration, restoring topsoil, and revegetation with

native species. A revegetation plan for the indicated areas is required to prevent erosion and replace habitat value.

Margin Restoration (MR)
The margins of developed sites must be managed in a way that promotes biological diversity and structural functionality. Margins should be tapered through the management of flora species based on height at maturity (ground covers in front, herbaceous layer, understory and then canopy). Flora species should be selected based on their function. For example, berry species for native bird habitat or flowering perennials for integrated pest management.

Riparian Buffer Zone (RBZ)
A licensed professional is recommended for establishing a management plan. This management plan should include elements that protect bed and bank from erosion, manage invasive species and serve as an ecological offset to the loss of habitat as a result of cultivation activities. The plan should also include elements that promote riparian functionality that include but are not limited to: temperature, microclimate, filtration, nutrient cycling, woody debris recruitment, groundwater recharge, bank stability, flood attenuation and flood water storage.

Road Approach (RA)
Sections of roads leading up to, and inboard ditches connected to, stream crossings must have elements of design that protect water quality. These elements include, but are not limited to: velocity dissipators, sediment traps, vegetated fill prisms, critical dips and appropriate road surfacing.

Road Management (RM)
Roads must be managed to prevent the destabilization of slopes, the sedimentation of watercourses and minimize the footprint of forest disturbance. A road assessment by a licensed professional is recommended to identify discharge strategies (i.e. outsloping, rolling-dips, inboard ditch with relief culvert, etc.), frequency and location of discharge points and surfacing with high grade aggregate material. The discharge points of roads require protected points of discharge to prevent the destabilization of slopes and the sedimentation of surface waters while increasing the infiltration rate to recharge groundwater supplies. Discharge points should include velocity dissipators and vegetation to promote the infiltration of runoff. All inboard ditches must be routinely maintained in preparation for the wet-season and at regular intervals during the wet-season. Strategies for maintaining inboard ditches are: remove built up sediment deposits and debris to maintain hydrologic function, instal check dams to dissipate velocity and trap sediment within the ditch, assess cross-drains to ensure function, instal velocity dissipators and enhance areas of infiltration at the discharge point of cross-drains and ditches to protect slopes and streams. All road approaches relative to stream crossings must direct the runoff of sediment into an engineered or vegetated sediment trap prior to entering the water course. Road margins and ceilings require fuel modification (see specific agency requirements governing the specs). Activities should be conducted in such a way so as to promote a healthy forest margin of understory

species as well as promoting infiltration and slope stabilization from road and slope runoff. The byproduct material from this management can be chipped to provide soil protection (mulch), plant nutrition (compost) and the remediation of agricultural runoff (remediation buffer). The margins between the road and stream banks require discharge protection, revegetation and riparian zone management. See *Standard Conditions Compliance Requirements* for more recommendations and seek the advice of a professional restorationist.

Seasonal Access Road (SAR)
Seasonal access roads service limited areas of rural properties during the dry season only. Prior to the wet-season, seasonal access roads should be "put-to-bed" to eliminate rutting, erosion and sediment discharge. The entrances/exits of seasonal access roads should be barricaded to prevent their use during the wet-season.

Water System Upgrades (WSU)
The following elements relate to the reasonable use of surface water, its storage, protections from catastrophic failure and wildlife protections. Upgrades include but are not limited to:

- Gas powered pumps, or generators to power electric pumps, must be 50-feet from surface water, in a secure structure with secondary containment and fire suppression equipment (i.e. extinguisher).
- All water storage must be maintained to prevent the catastrophic loss of stored water and its reasonable use. These elements include: float valves, manifolds, metal gate valves, armored conveyance, flexible connections at the tank bulkhead, stable foundations, pressure regulators, pressure gauges to monitor for leaks and water use meters.

Fertigation systems require a remediation basin to facilitate clean outs and protect water resources. Size basin to 110% of washout volume. The basin is backfilled with woody, chip material to facilitate the breakdown of nitrogenous discharge. These chips can be spread throughout the cultivation area after the wet season to enhance soil quality and increase the on-site production of plant nutrition.

<u>Other Recommended Water Resource Protection Elements</u>

Ecological Offsets
Soils compaction, forest fragmentation and water resource extraction are the results of roads, developed sites and cultivation activities. The loss of connectivity may have negative affects on native fauna. In the interest of offsetting the impacts to the natural environment it is recommended that forest management, groundwater recharge and habitat restoration plans be implemented by a ratio of 2:1 (two square feet of offsets for every one square foot of disturbance). An example of a simple offset is an *island(s) of refugia*. *IORs* provide habitat and protection for native fauna as they move across large clearings. *IORs* also provide beneficial aspects to cultivation actives in the form of Integrated Pest Management (IPM) by hosting beneficial species that target "pests" and microclimate management. They also provide shade for workers during the heat of the day.

Water Conservation

In an effort to reduce the irrigation requirements for the cultivation site and thus the forbearance storage and demand on surface water diversions the following water conservation strategies are recommended. Increase the organic material in the potting soil to enhance the water holding capacity of the medium. Protect the soil surface from direct insolation through the use of natural and/or living mulches. Irrigate less frequently and at a greater depth to encourage wide and deep root growth. Utilize offseason protocols such as living soil methods that increase the biological and moisture levels to facilitate plant growth with reduced irrigation requirements.

Integrated Pest Management - IPM

In an effort to reduce and ultimately eliminate the need for pesticides - chemical, natural, organic or otherwise - it is recommended that the cultivation site buffers be planted with native and analog plant species that attract and host pest predator species of invertebrates and birds. It is further recommended that habitat be created to attract and host reptile species that also prey on agricultural pests. Through the management of microclimates the need for fungicides can be reduced and ultimately eliminated.

The above are recommendations and not prescriptions of method and manner. Your WRPP provides short term strategies to prevent the discharge of sediment and cultivation related wastes from entering surface waters until permanent systems can be deployed during the appropriate time of year. All features should be engineered and implemented by licensed professionals where applicable.

Standard Conditions Compliance Requirements - 2019 Royal Leif Farms, LLC. / WDID: 1B16661CHUM / APN: 522-031-006-000						
Site Code	**Map Point Description**	**Standard Condition**	**Recommendations**	**Action Priority**	**Permanent Strategy**	**Completion Date**
1. Site Maintenance, Erosion Control and Drainage Feature						
RM IDM EDP SAR	Roads Ditch Relief Culvert Seasonal Access Road	Road Maintenance Other Corridors	**Triage Items** • Winterization Protocols. **Monitoring and Maintenance** • Hand-dig water bars at frequent intervals to discharge road runoff into protected discharge points. • Clear in-board ditches and the head of relief culverts of accumulated sediment dams and only enough vegetative debris to facilitate functionality. **Design** • See *Water Resources Protection Elements* document. • See attached documents for more information related to *short term strategies for protecting water quality.* • See attached documents for information related to *monitoring requirements.*			Compliant as of 12/14/19
			Winterization Strategies • Mulch road margins and discharge points to encourage native vegetation recruitment. • Lay straw-flake checkdams or straw wattles at frequent intervals on road surface to discharge road runoff into protected discharge points along satellite roads. • Use large woody debris as velocity dissipators at points of discharge to prevent erosion and disperse flow to promote infiltration. **Permanent Strategies** • Implement road drainage, discharge and maintenance per licensed professional's assessment. • Road elements to include but not limited to: • Shape and grade road to outslope to continually shed stormwater so as not to overwhelm in-board drainage features. • Replace water bars with rolling dips. • Install small, rock checkdams in-board ditches as a sediment control device.		On-Going	

Site Code	Map Point Description	Standard Condition	Recommendations	Action Priority	Permanent Strategy	Completion Date
RM IDM EDP SAR ISR MR	Roads Ditch Relief Culvert Seasonal Access Road Developed Sites Cultivation Site	Discharge Points	**Triage Items** • Winterization Protocols. **Monitoring and Maintenance** • Hand-dig water bars at frequent intervals to discharge road runoff into protected discharge points. • Clear in-board ditches and the head of relief culverts of accumulated sediment dams and only enough vegetative debris to facilitate functionality. • Use large woody debris as velocity dissipators at points of discharge to prevent erosion and disperse flow to promote infiltration. • Establish revegetation protocol. **Design** • See *Water Resources Protection Elements* document. • See attached documents for more information related to *short term strategies for protecting water quality.* • See attached documents for information related to *monitoring requirements*.			Compliant as of 12/14/19
			Winterization Strategies • Install straw bales or straw wattles along developed and cultivated site margins per erosion prevention protocol. • Mulch road margins, developed and cultivation site margins and slopes and discharge points to encourage native vegetation recruitment. • Lay straw-flake checkdams or straw wattles at frequent intervals on impervious surfaces to discharge road runoff into protected discharge points along satellite roads. • Protect discharge point with checkdam, straw flakes, large woody debris, etc. to slow the flow of discharge and allow sediment to fall out of suspension, prevent erosion and disperse flow to promote infiltration. **Permanent Strategies** • Implement discharge strategies per licensed professional's assessment. • Discharge elements to include but not limited to: • Armor the outflow end of discharge point and install a velocity dissipater. • Replace waterbars with rolling dips. • Increase frequency of discharge points. • Install infiltration basins at points of discharge. • Temporary erosion control strategies must be implemented before and immediately after earthworks.		On-Going	

Site Code	Map Point Description	Standard Condition	Recommendations	Action Priority	Permanent Strategy	Completion Date
RM IDM EDP SAR ISR MR	Roads Ditch Relief Culvert Seasonal Access Road Developed Sites Cultivation Site	Hydrologic Disconnection	**Triage Items** • Winterization Protocols. **Monitoring and Maintenance** • Reestablish connectivity with designed discharge strategy (i.e. install waterbar to reconnect road runoff with an in-board ditch). • Hand-dig water bars at frequent intervals to discharge road runoff into protected discharge points. • Lay straw-flake checkdams or straw wattles at frequent intervals to discharge road runoff into protected discharge points. • Establish straw-flakes or straw wattles along the entire perimeter of developed or cultivated sites (flats) at all potential points of hydrologic connectivity. • Clear in-board ditches and the head of relief culverts of accumulated sediment dams and only enough vegetative debris to facilitate functionality. • Use large woody debris as velocity dissipators at points of discharge to prevent erosion and disperse flow to promote infiltration. • Establish revegetation protocol. **Design** • See *Water Resources Protection Elements* document. • Establish revegetation protocol. • See attached documents for more information related to *short term strategies for protecting water quality.* • See attached documents for information related to *monitoring requirements*.			Compliant as of 12/14/19

			Winterization Strategies • Install straw bales or straw wattles along developed and cultivated site margins per erosion prevention protocol. • Mulch road margins, developed and cultivation site margins and slopes and discharge points to encourage native vegetation recruitment. • Lay straw-flake checkdams or straw wattles at frequent intervals on impervious surfaces to discharge road runoff into protected discharge points along satellite roads. • Protect discharge point with checkdam, straw flakes, large woody debris, etc. to slow the flow of discharge and allow sediment to fall out of suspension, prevent erosion and disperse flow to promote infiltration. **Permanent Strategies** • Implement hydrologic disconnection strategies per licensed professional's assessment. • Disconnection elements to include but not limited to: • Replace waterbars with rolling dips. • Install infiltration basins at points of discharge. • Increase frequency of discharge points. • Implement revegetation protocol.		On-Going	
Site Code	**Map Point Description**	**Standard Condition**	**Recommendations**	**Action Priority**	**Permanent Strategy**	**Completion Date**
MS	Materials Storage	Stockpiled Materials	**Triage Items** • Winterization Protocols. **Monitoring and Maintenance** • Ensure that stockpiled materials are organized, secured, covered and not a threat to water quality or wildlife. **Design** • See attached documents for more information related to *short term strategies for protecting water quality.* • See attached documents for information related to *monitoring requirements.*			Compliant as of 12/14/19

			Winterization • Utilize secure structure for potentially hazardous materials (materials that pose a threat to water quality). • Organize benign materials (materials that do not pose a threat to water quality). • Remove refuse and other unwanted materials from the property and dispose of offsite at an appropriate disposal facility. • Process byproducts related to road/site maintenance. **Permanent Strategies** •		On-Going	
Site Code	**Map Point Description**	**Standard Condition**	**Recommendations**	**Action Priority**	**Permanent Strategy**	**Completion Date**
2. Stream Crossing Maintenance						
C RA	Culverts Road Approaches	Functionality	**Triage Items** • Winterization Protocols. **Monitoring and Maintenance** • Ensure that road surfaces approaching the crossing drain into protected discharge points prior to watercourse. • Remove vegetative debris from the head of the culvert. • Low-Water Crossings are designed for seasonal use only. Do not use during wet-season or wet-periods. **Design** • Establish revegetation protocol for bank of riparian zone. • See attached documents for more information related to *short term strategies for protecting water quality*. • See attached documents for information related to *monitoring requirements*.			Compliant as of 12/14/19
			Winterization • Remove vegetative debris from the head of the culvert. • Maintain and prepare road approaches and road discharge strategies. **Permanent Strategies** • Implement stream crossing maintenance strategies or upgrade per licensed professional's assessment. • Crossing elements to include but not limited to: • Surface road with appropriate, high quality rock. • Ensure that road surfaces approaching the crossing drain into protected discharge points prior to watercourse. • Implement revegetation protocol for riparian zone.		On-Going	

Site Code	Map Point Description	Standard Condition	Recommendations	Action Priority	Permanent Strategy	Completion Date
3. Riparian and Wetland Protection and Management						
MR RA WSU RBZ	Cultivation Site Ancillary Sites Associated Facilities Riparian Buffer Zone	Discharge Setbacks Remediation and Restoration	**Triage Items** • Winterization Protocols. **Monitoring and Maintenance** • Deploy temporary strategies to disconnect cultivation site from surface water via stormwater runoff. **Design** • Establish a remediation and restoration plan with a licensed professional for the area of disturbance within the required riparian setbacks. • Establish riparian restoration plan with a licensed professional to restore the functionality of riparian buffer. • See *Water Resources Protection Elements* document. • See attached documents for more information related to *short term strategies for protecting water quality.* • See attached documents for information related to *monitoring requirements*.			Compliant as of 12/14/19
			Winterization • Establish straw-flakes or straw wattles along the entire perimeter of developed or cultivated sites (flats) at all potential points of hydrologic connectivity. • Mulch all exposed and disturbed soil including pathways, slope faces and pads or deploy other forms of erosion prevention. **Permanent Strategies** • Implement riparian restoration plan.		On-Going	

Site Code	Map Point Description	Standard Condition	Recommendations	Action Priority	Permanent Strategy	Completion Date
4. Spoils Management						
CS	Soil and Spoils Processing Site Cultivation Site	Discharge Setbacks Side-Cast Material	**Triage Items** • Winterization Protocols. • Cultivation related spoils can not be burned. **Monitoring and Maintenance** • Maintain perimeter containment of soil and compost piles. • Maintain plastic cover, mulch or living cover crop. **Design** • Create an on-site resource plan for processing forest side-cast material based on seasonal prescriptions. • See *Cannabis Waste Management Plan* for more information. • See attached documents for more information related to *short term strategies for protecting water quality*. • See attached documents for information related to *monitoring requirements*.			Compliant as of 12/14/19
			Winterization • Contain used soil pile with a straw bale or wattle perimeter. • Contain used compost pile with a straw bale or wattle perimeter. • Seed and mulch or tarp used soil pile. • Contain non-compostable byproducts, such as rock-wool rooting medium, to be disposed of properly offsite. **Permanent Strategies** • Establish a 3-tiered composting system for vegetative byproducts. • Rip compacted soils prior to placing spoils to promote the infiltration of tailwater. • Install remediation buffer at all downslope points of discharge to riparian zones. Terminate swale at an infiltration basin. • Plant remediation buffer berm and infiltration basin with appropriate management species. • Process forest side-cast material based on seasonal prescriptions and on-site resource planning.		On-Going	

Site Code	Map Point Description	Standard Condition	Recommendations	Action Priority	Permanent Strategy	Completion Date
5. Water Storage and Use						
W WSU	Point of Diversion Water Storage Cultivation Site	Water Quality Water Quantity Water Conservation Size and Scope Wetland Protection	**Triage Items** • Install pressure gauge to monitor conveyance system for leaks. • Install back flow prevention device. **Monitoring and Maintenance** • Check pressure gauge to monitor conveyance system for leaks. **Design** • Assess total water volume required for full forbearance period. • Assess an alternative source of water such as rainwater catchment. • Assessment for *Living Soils* style of cultivation to reduce irrigation. • See attached documents for more information related to *short term strategies for protecting water quality*. • See attached documents for information related to *monitoring requirements*.			Compliant as of 12/14/19
			Winterization • Prepare water storage: inspect float valve, bulk-heads, overflow, and valves for functionality. • Inspect water storage foundations for stability. • Inspect water storage site for hazardous trees that pose a threat to storage tanks and conveyance. **Permanent Strategies** • Armor valves and conveyance. • Install irrigation system so that water is applied at the root zone to promote deep, wide root growth. • Replace plastic valves at tank with metal gate valves. • Manifold tanks greater than 3,000-gallons internally. • Install rainwater catchment system at all structures and plumb to main storage. • Mulch all exposed soil to reduce evaporative rates. • Implement *Living Soils* design plan.		On-Going	

Site Code	Map Point Description	Standard Condition	Recommendations	Action Priority	Permanent Strategy	Completion Date
6. Irrigation Runoff						
ISR MR	Cultivation Site	Discharge	**Triage Items** • **Monitoring and Maintenance** • Monitor irrigation volumes to avoid runoff. • Soil nutrition testing to guide feeding regiment to prevent the overuse of fertilizers and amendments thus preventing excessive leaching. • Inspect irrigation system for leaks. • Employ rain-triggered shutoff devices for automated irrigation systems. **Design** • See attached documents for more information related to *short term strategies for protecting water quality*. • See attached documents for information related to *monitoring requirements*.			Compliant as of 12/14/19
			Winterization • Mulch all exposed soil including planting areas, pathways and pads. • Plant cover crops in cultivation areas to lock-up nutrients and limit leaching during wet-season. • Clean-out and store fertigation system. **Permanent Strategies** • Mulch all exposed soil including planting areas, pathways and pads.		On-Going	

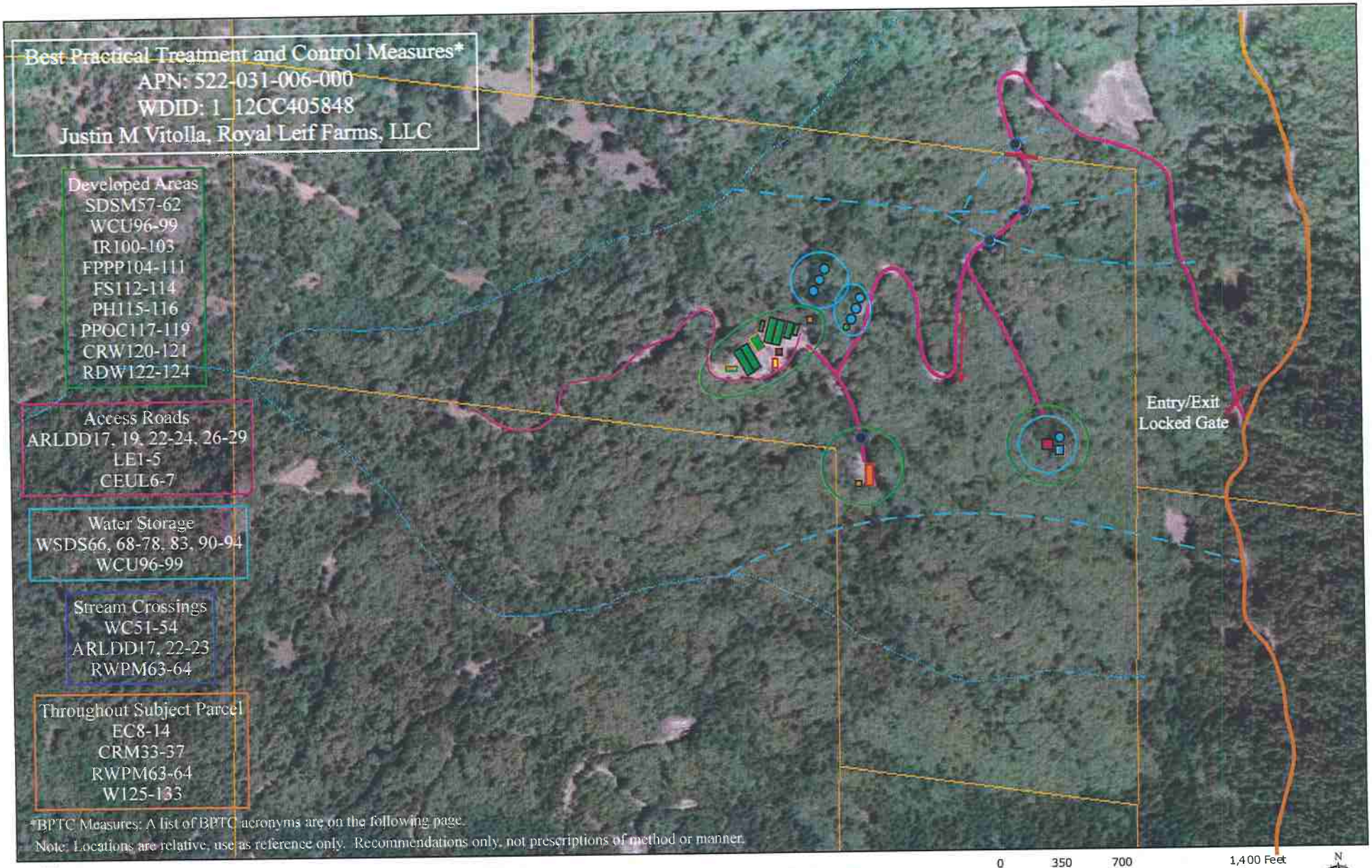
Site Code	Map Point Description	Standard Condition	Recommendations	Action Priority	Permanent Strategy	Completion Date
7. Fertilizers and Soil Amendments						
ISR MR FT MS	Cultivation Site Fertigation Materials Storage	Discharge	**Triage Items** • Post inventory of cultivation related materials with application rates and Material and Safety Data Sheets (MSDS). • Store spill-kit at each storage facility. **Monitoring and Maintenance** • Products shall be labeled properly and applied according to the label. • Periodically calibrate application equipment. • Update application rates based on soil nutrition testing results to prevent the overuse of fertilizers and amendments thus preventing excessive leaching. **Design** • Develop a *Living Soils* program to replace packaged products. • See attached documents for more information related to *short term strategies for protecting water quality.* • See attached documents for information related to *monitoring requirements.*			Compliant as of 12/14/19
			Winterization • Clean-out and store fertigation system. • Evaluate inventory and prepare fertilizers and amendments that are no longer used to be disposed of at an appropriate facility. • Inspect and secure storage facility. **Permanent Strategies** • Implement *Living Soils* program.		On-Going	

Site Code	Map Point Description	Standard Condition	Recommendations	Action Priority	Permanent Strategy	Completion Date
8. Pesticides and Herbicides						
ISR MR MS	Cultivation Site Materials Storage	Discharge	**Triage Items** • Post inventory of cultivation related materials with application rates and Material and Safety Data Sheets (MSDS). • Store spill-kit at each storage facility. **Monitoring and Maintenance** • Products shall be labeled properly and applied according to the label. • Periodically calibrate application equipment. • Update application rates based on the presence of pests to prevent the overuse of pesticides. **Design** • Develop an *Integrated Pest Management* program to replace packaged products. • See attached documents for more information related to *short term strategies for protecting water quality*. • See attached documents for information related to *monitoring requirements*.			Compliant as of 12/14/19
			Winterization • Evaluate inventory and prepare fertilizers and amendments that are no longer used to be disposed of at an appropriate facility. • Inspect and secure storage facility. **Permanent Strategies** • Implement *Integrated Pest Management* program.		On-Going	

Site Code	Map Point Description	Standard Condition	Recommendations	Action Priority	Permanent Strategy	Completion Date
9. Petroleum Products and Other Chemicals						
MS	Materials Storage	Discharge	**Triage Items** • Store spill-kit at each storage facility. • Provide appropriate fire prevention strategies and fire suppression equipment at each facility. **Monitoring and Maintenance** • Place all liquid-based materials in secondary containment (totes). • Assess solar battery system for leaks. **Design** • Assess alternative sources of power such as solar, wind or propane. • See attached documents for more information related to *short term strategies for protecting water quality*. • See attached documents for information related to *monitoring requirements*.			Compliant as of 12/14/19
			Winterization • Evaluate inventory and prepare used oil and gas or other petroleum-based products that are no longer used to be disposed of at an appropriate facility. • Inspect and secure storage facility. **Permanent Strategies** • Install alternative source of power system.		On-Going	

Site Code	Map Point Description	Standard Condition	Recommendations	Action Priority	Permanent Strategy	Completion Date
10. Cultivation Related Wastes						
CS	Soil and Spoils Processing Site Cultivation Site	Discharge	**Triage Items** • Winterization Protocols. • Cultivation related spoils can not be burned. **Monitoring and Maintenance** • Maintain perimeter containment of soil and compost piles. • Maintain plastic cover, mulch or living cover crop. • **Design** • Establish a soil management plan for the purpose of reducing off-site soil. • See *Cannabis Waste Management Plan* for more information. • See attached documents for more information related to *short term strategies for protecting water quality*. • See attached documents for information related to *monitoring requirements*.			Compliant as of 12/14/19
			Winterization • Contain used soil pile with a straw bale or wattle perimeter. • Contain used compost pile with a straw bale or wattle perimeter. • Seed and mulch or tarp used soil pile. • Contain non-compostable byproducts, such as rock-wool rooting medium, to be disposed of properly offsite. **Permanent Strategies** • Establish a 3-tiered composting system for vegetative byproducts. • Rip compacted soils prior to placing spoils to promote the infiltration of tailwater. • Install remediation buffer at all downslope points of discharge to riparian zones. Terminate swale at an infiltration basin. • Plant remediation buffer berm and infiltration basin with appropriate management species. • Implement *living-soils* management for the purpose of eliminating the need for off-site soil.		On-Going	

Site Code	Map Point Description	Standard Condition	Recommendations	Action Priority	Permanent Strategy	Completion Date
11. Refuse and Human Waste						
MS	Developed Sites Materials Storage	Discharge	**Triage Items** • Winterization Protocols. **Design** • See attached documents for more information related to *short term strategies for protecting water quality.* • See attached documents for information related to *monitoring requirements.* **Monitoring and Maintenance** • Ensure that refuse and stockpiled materials are organized, secured, covered and not a threat to water quality or wildlife.			Compliant as of 12/14/19
			Winterization • Utilize secure structure for potentially hazardous materials (materials that pose a threat to water quality). • Organize benign materials (materials that do not pose a threat to water quality). • Remove refuse and other unwanted materials from the property and dispose of offsite at an appropriate disposal facility. **Permanent Strategies** • Installation of permanent human-waste facility (septic system,).		On-Going	



ArcGIS Web Map

Humboldt County Planning and Building Department

Printed: July 10, 2018 Web AppBuilder 2.0 for ArcGIS

Map Disclaimer:
While every effort has been made to assure the accuracy of this information, it should be understood that it does not have the force & effect of law, rule, or regulation. Should any difference or error occur, the law will take precedence.

Highways and Roads
- Principal Arterials
- Minor Arterials
- Major Collectors
- Minor Collectors
- Local Roads

- Private or Unclassified
- Major River or Stream

Blue Line Streams
- Perennial 1-3
- Perennial >4
- Intermittent
- Subsurface

- City Boundary
- Counties
- Parcels
- Compost
- Fertigation

- Culvert
- Water Tank
- Well
- Materials Storage
- Generator Shed
- Harvest Storage
- Chemical Storage
- Green House
- Outdoor Garden
- Immature Plants

0 350 700 1,400 Feet
0 0.05 0.1 0.2 Miles
RF= 1:9,028 1 in = 752 ft

N W E S

Sources: Humboldt County GIS
California Coastal Commission GIS/Mapping Unit, 2014
Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
FRAP, FEMA, USGS

Prepared by Compliant Farms Certified, updated 11/12/18

Acronyms for Best Practical Treatment and Control Measures

ARLDD: Access Road/Land Development and Drainage
CEUL: Construction Equipment Use and Limitations
CRM: Cleanup, Restoration and Mitigation
CRW: Cultivation Related Waste
DC: Drainage Culverts
EC: Erosion Control
FPPP: Fertilizers, Pesticides and Petroleum Products
FS: Fertilizers and Soils
IR: Irrigation Runoff
LE: Limitations on Earthmoving
LWWPPA: Limitations on Work in Watercourses and Permanently Ponded Areas
PH: Pesticides and Herbicides
PPOC: Petroleum Products and Other Chemicals
RDW: Refuse and Domestic Waste
RWPM: Riparian and Wetland Protection and Management
SDSM: Soil Disposal and Spoils Management
W: Winterization
WC: Water Course Crossings
WCU: Water Conservation and Use
WSDS: Water Supply, Diversion and Storage

State Water Resources Control Board - Order WQ 2017-0023-DWQ Site Management Plan - 2019		
Royal Leif Farms, LLC. / WDID: 1B16661CHUM / APN: 522-031-006-000		
1. Sediment Discharge BPTC Measures		
1.1 Site Characteristics		
1.1.1. Site Map	**Recommendations**	**Monitoring**
Provide a map showing access roads, vehicle parking areas, streams, stream crossings, cultivation site(s), disturbed areas, buildings, and other relevant site features.		
See attached Property Diagram.		
1.1.2. Access Road		
Description	**Recommendations**	**Monitoring**
Describe the access road conditions including estimating vehicle traffic, road surface (e.g., paved, rocked, or bare ground), and maintenance activities. Describe how storm water is drained from the access road (e.g., crowned, out slope, armored ditch, culverts, rolling dips, etc.).		
Community roads are graded annually and aggregate is employed where necessary. Roads are outsloped where possible with rollings dips to provide drainage. Where outsloping is not possible an inboard ditch is utilized. Inboard ditches are cleared annually and as needed. These roads service many parcels within the community with an estimated 15 vehicles daily during the summer and fall months. Road maintenance is shared amongst many members of the community.		Seasonal and As Needed.
Access roads are graded as needed and aggregate is employed where necessary. Roads are outsloped where possible and where outsloping is not possible an inboard ditch is utilized. There are no cross drains. Inboard ditches discharge at corners into protected discharge points. Inboard ditches are cleared annually and as needed. These roads only service the subject parcel with daily traffic of one vehicle per day and two vehicles seasonally (summer and fall months)		Seasonal and As Needed.
Season access roads are utilized only by ATV and foot traffic. They are maintained by hand. Seasonal access roads are "put-to-bed" for the winter months to prevent erosion and discharge into surface waters.		Seasonal and As Needed.

1.1.2. Requirements		
Subsection	**Description**	**Deployment**
17. Access Road / Land Development and Drainage	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.	On-Going.
19. Access Road / Land Development and Drainage	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.	Per Project Protocols
22. Access Road / Land Development and Drainage	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.	On-Going.
23. Access Road / Land Development and Drainage	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.	Prior to wet-season.
24. Access Road / Land Development and Drainage	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.	Per Project Protocols
26. Access Road / Land Development and Drainage	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.	On-Going.

27. Access Road / Land Development and Drainage	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.	Seasonally.
29. Access Road / Land Development and Drainage	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.	Per Project Protocols

1.1.3 Stream Crossings

Description	Recommendations	Monitoring
Describe any vehicle stream crossing including the type of crossing (e.g., bridge, culvert, low water, etc.).		
C1: metal culvert	Installed per an existing LSAA and meets BPTC requirements.	Seasonally.
C2: metal culvert	Installed per an existing LSAA and meets BPTC requirements.	Seasonally.
C3: metal culvert	Installed per an existing LSAA and meets BPTC requirements.	Seasonally.
C4: metal culvert	Installed per an existing LSAA and meets BPTC requirements.	Seasonally.

1.1.3. Requirements - Monitoring

Subsection	Description	Deployment
51. Watercourse Crossings	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.	On-Going and Seasonally.

52. Watercourse Crossings	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.	Seasonally.
53. Watercourse Crossings	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.	Seasonally.
54. Watercourse Crossings	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.	On-going and Seasonally. 0.5 in/day or 1.0 inch/7 days of precipitation.
17. Access Road / Land Development and Drainage	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.	On-Going.

22. Access Road / Land Development and Drainage	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.	On-Going.
23. Access Road / Land Development and Drainage	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.	Prior to wet-season.
63. Riparian and Wetland Protection and Management	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.	On-Going.
64. Riparian and Wetland Protection and Management	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.	On-Going.

1.1.3.1. Legacy Discharge Issues

Description	Recommendations	Monitoring
For Region 1 Dischargers, identify, discuss, and locate on the site map any legacy waste discharge issues that exist on the property.		
There are no legacy discharge issues associated with the subject parcel.	NA	NA

1.2 Sediment Erosion Prevention and Sediment Capture

1.2.1. Erosion Prevention BPTC Measures

Description	Recommendations	Monitoring
1.2.1.1. Describe the BPTC measures that have been, or will be implemented to prevent or limit erosion. Provide an implementation schedule for BPTC measures that have not yet been implemented. Identify the erosion prevention BPTC measures on a site map.		

See attached documents: Water Resource Protection Elements Site Map and Project Descriptions, Water Resource Protection Plan: Standard Conditions Compliance Requirements, Best Practical Treatments and Controls Site Map, Monitoring Timeline and Data Log, and Winterization Protocols for Statewide Cannabis Order.	Per Document
Roads: Construction and regular maintenance ensure that road discharge does not threaten water quality. Discharge points are associated with stable slopes and well vegetated areas. Winterization protocols will be deployed by the onset of the wet-season (November 15) of each year.	On-Going and Seasonally.
Developed Areas: Margins are well vegetated and surfaces are maintained. Winterization protocols will be deployed by the onset of the wet-season (November 15) of each year.	On-Going and Seasonally.
Cultivation Sites: Margins are well vegetated and sites meet the minimum setbacks from surface water. Winterization protocols will be deployed by the onset of the wet-season (November 15) of each year.	On-Going and Seasonally.
Other Areas: Engineered discharge points (EDP) and road approaches (RA) will be maintained as necessary to prevent erosion.	On-Going and Seasonally.
1.2.1.1.1. The description shall address physical BPTC measures and biological BPTC measures.	
See attached documents: Water Resource Protection Elements Site Map and Project Descriptions, Water Resource Protection Plan: Standard Conditions Compliance Requirements, Best Practical Treatments and Controls Site Map, Monitoring Timeline and Data Log, and Winterization Protocols for Statewide Cannabis Order.	Per Document
1.2.2. Sediment Control BPTC Measures	
Description	**Recommendations** / **Monitoring**
1.2.2.1. Describe the BPTC measures that have been, or will be implemented to capture sediment that has been eroded. Provide an implementation schedule for BPTC measures that have not yet been implemented. Identify the sediment control BPTC measures on a site map.	
See attached documents: Water Resource Protection Elements Site Map and Project Descriptions, Water Resource Protection Plan: Standard Conditions Compliance Requirements, Best Practical Treatments and Controls Site Map, Monitoring Timeline and Data Log, and Winterization Protocols for Statewide Cannabis Order.	Per Document
1.2.2.1.1. The description shall address physical BPTC measures and biological measures.	
See attached documents: Water Resource Protection Elements Site Map and Project Descriptions, Water Resource Protection Plan: Standard Conditions Compliance Requirements, Best Practical Treatments and Controls Site Map, Monitoring Timeline and Data Log, and Winterization Protocols for Statewide Cannabis Order.	Per Document

1.2.3. Maintenance Activities - Erosion Prevention and Sediment Control		
Description	**Recommendations**	**Monitoring**
1.2.3.1. Describe how the erosion prevention and sediment control BPTC measures will be monitored and maintained to protect water quality.		
See attached documents: Water Resource Protection Plan: Standard Conditions Compliance Requirements, Monitoring Timeline and Data Log, and Winterization Protocols for Statewide Cannabis Order.		Per Document
1.2.3.2. Describe how any captured sediment will be either stabilized in place, excavated and stabilized on-site, or removed from site.		
Captured sediment is mostly in association with road discharge. Inboard ditches and discharge points will be maintained regularly and excavated sediment will be taken to a nearby site to be stabilized through grading and revegetation.		On-Going and Seasonally.

1.2.1. - 1.2.3. Requirements		
Subsection	**Description**	**Deployment**
8. Erosion Control	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.	On-Going.
9. Erosion Control	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.	Seasonally.
10.a. Erosion Control	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.	In conjunction with earthwork.

10.b. Erosion Control	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.	In conjunction with earthwork.
10.c. Erosion Control	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.	Prior to wet-season.
10.d. Erosion Control	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.	On-Going.
11. Erosion Control	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.	On-Going.

12. Erosion Control	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.	Seasonally.
13. Erosion Control	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.	In conjunction with earthwork.
14. Erosion Control	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.	0.5in/day or 1.0in/7-days of precip.

1.2.4. Erosion Control BPTC Measures		
Description	**Recommendations**	**Monitoring**
Describe the interim soil stabilization, if applicable and long-term BPTC measures implemented to prevent sediment transport at each identified disturbed area(s) and improperly constructed features.		
See attached documents: Water Resource Protection Plan: Standard Conditions Compliance Requirements, Monitoring Timeline and Data Log, and Winterization Protocols for Statewide Cannabis Order.		Seasonal and As Needed.

2. Fertilizer, Pesticide, Herbicide and Rodenticide BPTC Measures		
2.1. Summary Table	**Recommendations**	**Monitoring**
Provide a summary table that identifies the products used at the site, when they are delivered to the site, how they are stored, and used at the site. If products are not consumed during the growing season, describe how they are removed from the site or stored to prevent discharge over the winter season.		

See attached documents: Water Resource Protection Plan: Standard Conditions Compliance Requirements, Cultivation Activities Product Descriptions, Cannabis Waste Management Plan, Pest Management Plan, and Solid and Hazardous Waste Management Plan.		Per Document
2.2. Site Map	**Recommendations**	**Monitoring**
Provide a site map that locates storage locations.		
See attached Property Diagram.		
2.3. Storage, Application and Disposal		
Description	**Recommendations**	**Monitoring**
Describe how bulk fertilizers and chemical concentrates are stored, mixed, applied and how empty containers are disposed.		
See attached documents: Water Resource Protection Plan: Standard Conditions Compliance Requirements, Cultivation Activities Product Descriptions, Cannabis Waste Management Plan, Pest Management Plan, and Solid and Hazardous Waste Management Plan.		Per Document
2.4. Spill Prevention and Cleanup		
Description	**Recommendations**	**Monitoring**
Describe procedures for spill prevention and cleanup.		
See attached documents: Water Resource Protection Plan: Standard Conditions Compliance Requirements, Cultivation Activities Product Descriptions, Cannabis Waste Management Plan, Pest Management Plan, and Solid and Hazardous Waste Management Plan.		Per Document
2.3. - 2.4. Requirements		
Subsection	**Description**	**Deployment**
57. Soil Disposal and Spoils Management	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.	On-Going.
58. Soil Disposal and Spoils Management	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.	On-Going.

59. Soil Disposal and Spoils Management	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.).	On-Going.
60. Soil Disposal and Spoils Management	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.	On-Going.
61. Soil Disposal and Spoils Management	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.	On-Going.
62. Soil Disposal and Spoils Management	Cannabis cultivators shall haul away and properly dispose of excess soil and other debris as needed to prevent discharge to waters of the state.	On-Going.
104. Fertilizers, Pesticides and Petroleum Products	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.	On-Going.
105. Fertilizers, Pesticides and Petroleum Products	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.	On-Going.

106. Fertilizers, Pesticides and Petroleum Products	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. 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.	On-Going.
107. Fertilizers, Pesticides and Petroleum Products	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.	Prior to and during wet-season.
108. Fertilizers, Pesticides and Petroleum Products	Cannabis cultivators shall only use hazardous materials[24] in a manner consistent with the product's label.	On-Going.
109. Fertilizers, Pesticides and Petroleum Products	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.	On-Going.
110. Fertilizers, Pesticides and Petroleum Products	Cannabis cultivators shall only mix, prepare, apply, or load hazardous materials outside of the riparian setbacks.	On-Going.
111. Fertilizers, Pesticides and Petroleum Products	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.	Prior to any rain event.
112. Fertilizers and Soils	To minimize infiltration and water quality degradation, Cannabis cultivators shall irrigate and apply fertilizer to consistent with the crop need (i.e., agronomic rate).	On-Going.
113. Fertilizers and Soils	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.	On-Going.

114. Fertilizers and Soils	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 groundwater.	On-Going.
115. Pesticides and Herbicides	Cannabis cultivators shall not apply restricted materials, including restricted pesticides, or allow restricted materials to be stored at the cannabis cultivation site.	On-Going.
116. Pesticides and Herbicides	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]	On-Going.

3. Petroleum Product BPTC Measures

3.1. Summary Table	Recommendations	Monitoring
Provide a summary table that identifies the products used at the site, when they are delivered to the site, how they are stored, and used at the site. If products are not consumed during the growing season, describe how they are removed from the site or stored to prevent discharge over the winter season.		
See attached documents: Water Resource Protection Plan: Standard Conditions Compliance Requirements, Cultivation Activities Product Descriptions, Cannabis Waste Management Plan, Pest Management Plan, and Solid and Hazardous Waste Management Plan.		Per Document

3.2. Site Map	Recommendations	Monitoring
Provide a site map that locates storage locations.		
See attached Property Diagram.		

3.3. Storage, Application and Disposal		
Description	**Recommendations**	**Monitoring**
Describe how fuels, lubricants and other petroleum products are stored, mixed, applied and empty containers are disposed.		
See attached documents: Water Resource Protection Plan: Standard Conditions Compliance Requirements, Cultivation Activities Product Descriptions, Cannabis Waste Management Plan, Pest Management Plan, and Solid and Hazardous Waste Management Plan.		Per Document

3.4. Spill Prevention and Cleanup		
Description	**Recommendations**	**Monitoring**
Describe procedures for spill prevention and cleanup.		

See attached documents: Water Resource Protection Plan: Standard Conditions Compliance Requirements, Cultivation Activities Product Descriptions, Cannabis Waste Management Plan, Pest Management Plan, and Solid and Hazardous Waste Management Plan.		Per Document
3.1. - 3.4. Requirements		
Subsection	**Description**	**Deployment**
117. Petroleum Products and Other Chemicals	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.	On-Going.
118. Petroleum Products and Other Chemicals	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.	On-Going.
119. Petroleum Products and Other Chemicals	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.	On-Going.
4. Trash/Refuse and Domestic Wastewater BPTC Measures		
4.1. Types, Containment and Disposal		
Description	**Recommendations**	**Monitoring**
Describe procedures for spill prevention and cleanup.		
See attached documents: Water Resource Protection Plan: Standard Conditions Compliance Requirements, Cultivation Activities Product Descriptions, Cannabis Waste Management Plan, Pest Management Plan, and Solid and Hazardous Waste Management Plan.		Per Document
4.1.1. Site Map	**Recommendations**	**Monitoring**
Provide a site map that locates the trash/refuse storage locations.		
See attached Property Diagram.		

4.1. Requirements		
Subsection	**Description**	**Deployment**
120. Cannabis-Related Waste	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.	On-Going.
121. Cannabis-Related Waste	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 to prevent polluted runoff.	On-Going.
122. Refuse and Domestic Waste	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.	On-Going.
123. Refuse and Domestic Waste	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.	On-Going.
124. Refuse and Domestic Waste	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.	On-Going.

4.2. Employees, Visitors or Residents		
Description	**Recommendations**	**Monitoring**
Describe the number of employees, visitors or residents at the site.		
Two employees, no visitors and one resident.		
4.2.1. Domestic Wastewater		
Description	**Recommendations**	**Monitoring**
Describe the types of domestic wastewater generated at the site.		
Waste water (grey water) from hand washing and showering is generated at the site. Waste water (black water) from human waste is generated at the site.		
4.2.2. Domestic Wastewater Disposal		
Description	**Recommendations**	**Monitoring**
Describe how the domestic wastewater is disposed.		
Waste water (grey water) from hand washing and showering is disposed of in a grey water system.		
Waste water (black water) from human waste is disposed of in a certified portable unit that is serviced monthly.		
4.2.2.1. Permitted Onsite Wastewater Treatment System		
Description	**Recommendations**	**Monitoring**
Describe the permitted onsite wastewater treatment system if applicable.		
A "Suitability Assessment" has been conducted.	Installation of a permitted OWTS per design protocols as set forth in the suitability assessment by a licensed professional.	Per Project Protocols
4.2.2.2. Chemical Toilets and Holding Tank		
Description	**Recommendations**	**Monitoring**
If so, provide the name of the servicing company and the frequency of service.		

Six Rivers Portable Toilets are serviced monthly or as needed.

4.2.2.3. Outhouse or Privy		
Description	**Recommendations**	**Monitoring**
Use of this alternative requires approval from the Regional Water Board Executive Officer; include approval from the Executive Officer and any conditions imposed for use of this alternative.		
NA		

4.2.2.3.1. Site Map		
	Recommendations	**Monitoring**
Provide a site map that locates any domestic wastewater treatment, storage or disposal.		
See attached Property Diagram.		

5. Winterization BPTC Measures		
5.1. Activities		
Description	**Recommendations**	**Monitoring**
Describe activities that will be performed to winterize the site and prevent discharges of waste. The description should address all the issues listed above.		
See attached documents: Water Resource Protection Plan: Standard Conditions Compliance Requirements, Monitoring Timeline and Data Log, and Winterization Protocols for Statewide Cannabis Order.		Per Document

5.2. Maintenance		
Description	**Recommendations**	**Monitoring**
Describe maintenance of all drainage or sediment capture features (e.g., drainage culverts, drainage trenches, settling ponds, etc.) to remove debris, soil blockages, and ensure adequate capacity exists.		
See attached documents: Water Resource Protection Plan: Standard Conditions Compliance Requirements, Monitoring Timeline and Data Log, and Winterization Protocols for Statewide Cannabis Order.		Per Document

5.1. - 5.2. Requirements		
Subsection	**Description**	**Deployment**
125. Winterization	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.	On-Going and Seasonally.
126. Winterization	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.	Prior to wet-season.
127. Winterization	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.	On-Going and Seasonally.
128. Winterization	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.	Prior to wet-season.
129. Winterization	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.	On-Going and Seasonally. 0.5 in/day or 1.0 inch/7 days of precipitation.
130. Winterization	Cannabis cultivators shall stabilize all disturbed areas and construction entrances and exits to control erosion and sediment discharges from land disturbance.	Prior to and during wet-season.
131. Winterization	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.	Prior to and during wet-season.
132. Winterization	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.	Prior to and during wet-season.

133. Winterization	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.	TBD

5.3. Revegetation		
Description	**Recommendations**	**Monitoring**
Describe any revegetation activities that will occur either at the beginning or end of the precipitation season.		
See attached documents: Water Resource Protection Plan: Standard Conditions Compliance Requirements, Monitoring Timeline and Data Log, and Winterization Protocols for Statewide Cannabis Order.		Per Document

5.3. Requirements		
Subsection	**Description**	**Deployment**
9. Erosion Control	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.	Seasonally.
10.b. Erosion Control	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.	In conjunction with earthwork.

19. Access Road / Land Development and Drainage	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.	Per Project Protocols
20. Access Road / Land Development and Drainage	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.	Per Project Protocols
21. Access Road / Land Development and Drainage	Cannabis cultivators shall have a qualified professional design the optimal access road alignment, surfacing, drainage, maintenance requirements, and spoils handling.	Per Project Protocols
24. Access Road / Land Development and Drainage	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.	Per Project Protocols
25. Access Road / Land Development and Drainage	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.	Per Project Protocols
27. Access Road / Land Development and Drainage	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.	Per Project Protocols
28. Access Road / Land Development and Drainage	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.	Per Project Protocols

29. Access Road / Land Development and Drainage	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.	Per Project Protocols
32. Cleanup, Restoration and Mitigation	Cannabis cultivators shall limit disturbance to existing grades and vegetation to the actual site of the cleanup or remediation and any necessary access routes.	Per Project Protocols
33. Cleanup, Restoration and Mitigation	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.	On-Going and Seasonally.
34. Cleanup, Restoration and Mitigation	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.	On-Going and Seasonally.

35. Cleanup, Restoration and Mitigation	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).	On-Going and Seasonally.
36. Cleanup, Restoration and Mitigation	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.	On-Going and Seasonally.
37. Cleanup, Restoration and Mitigation	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.	On-Going and Seasonally.
63. Riparian and Wetland Protection and Management	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.	On-Going.
64. Riparian and Wetland Protection and Management	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.	On-Going.

5.4. Compliance Schedule		
Description	**Recommendations**	**Monitoring**
If any BPTC measure cannot be completed before the onset of winter period, contact the Regional Water Board to establish a compliance schedule.		
NA		

5.5. Legacy Waste Discharge Issues		
Description	**Recommendations**	**Monitoring**
For Region 1 Dischargers, describe any activities that will be performed to address legacy discharge issues.		
There are no legacy discharge issues associated with the subject parcel.	NA	NA

These are recommendations only and not prescriptions for method or manner. All work should be designed and implemented by licensed professionals. We accept no liability for owner-build work based on this management plan.

Rural Property Seasonal Timeline

	Topography	Roads	Water System	Natural Areas	Agriculture/ Livestock
January	Monitor/Maintain	Monitor/Maintain	Monitor/Maintain	Fuel Load Reduction	Prune Orchards
February	Monitor/Maintain	Monitor/Maintain	Monitor/Maintain	Fuel Load Reduction	Amend Ag Zones
March	Monitor/Maintain	Monitor/Maintain	Monitor/Maintain	Fuel Load Reduction	Chop Cover Crop
April	Implementation	Implementation	Monitor/Maintain	Forest Resources	Mulch/Amend
May	Implementation	Implementation	Assess Water System	Invasive Species Management	Monitor
June	Professional Assessment	Professional Assessment	Assess Water System	Professional Assessment	Monitor
July	Implementation	Implementation	Assess Water System	Invasive Species Management	Monitor
August	Implementation	Implementation	Assess Water System	Monitor	Monitor
September	Implementation	Implementation	Assess Water System	Restoration	Winterization
October	Erosion Control	Culverts/Drainage	Update Water System	Restoration	Plant Cover Crop
November	Winterization	Winterization	Winterization	Restoration	Monitor
December	Monitor/Maintain	Monitor/Maintain	Monitor/Maintain	Restoration	Monitor

*See other side for descriptions.

Topography: Slopes related to areas of development that have the capacity for erosion and/or failure.
Monitor/Maintain: Assess winterization and engineered features. Maintain as necessary.
Implementation: Engineered features based on professional assessment.
Professional Assessment: Assessment of slopes, erosion and unstable features by a licensed professional.
Erosion Control: Purchase and stage erosion control materials at sites requiring winterization.
Winterization: Deploy erosion control (brush-weirs, erosion seed mix, wattles, straw mulch) by November 15th of each year. Plant native plants per professional assessment after soil moisture reaches 12-inches in depth.

Roads: Main access, seasonal roads and atv roads.
Monitor/Maintian: Assess winterization and engineered features. Maintain as necessary.
Implementation: Engineered features based on professional assessment.
Professional Assessment: Assessment of surface, margins, stream crossings, cross drains, and discharge points by a licensed professional.
Culverts and Drainage: Clear culverts and cross drains, maintain inboard ditches and discharge points.
Winterization: Deploy winterization protocols by November 15th of each year.

Water System: Diversion, Storage and Use.
Monitor and Maintain: Maintain float valves, manifolds and overflow to ensure proper filling of storage tanks. Purge rainwater catchment first-flush mechanism.
Maintain diversion infrastructure (foot valve) for proper placement in channel and functionality of organism exclusion device.
Assess Water System: Filters, storage volume, conveyance, use (meter) and check for leaks.
Update Water System: Purge sediment, clean/replace filters, expand storage volume, and maintain conveyance/fittings/valves. Install rainwater catchment.
Winterization: Prepare rainwater catchment system. Inspect foot-valve, float valves and overflow system.

Natural Areas: Includes forests, grasslands and riparian areas.
Fuel Load Reduction: Mechanical maintenance of road margins and CalFire zones.
Forest Resources: Fir poles, fire wood, etc.
Invasive Species Management: Mechanical removal of invasive/exotic plants based on species specific management protocols.
Professional Assessment: Assessment of forests, grasslands and riparian areas by a licensed professional.
Monitor: Documentation of elements outlined by professional assessment, restoration plan and restoration projects
Restoration: Engineered and vegetative restoration-based projects implementation.

Agriculture and Livestock
Prune Orchards: Prune based on species specific protocols.
Amend Ag Zones: Amend soil based on use (crops, pastures, etc.).
Chop Cover Crop: Chop and mulch cover crop at least three weeks before planting.
Mulch/Amend: Add spring nutrients based on species specific protocols. Mulch with appropriate strategies to protect soil from desiccation and erosion.
Monitor: Monitor soil, plants and livestock for needs and system upgrades. Monitor rational grazing zones.
Winterization: Prepare soil, livestock and structures for winter season. Continue monitoring.
Plant Cover Crop: Plant in conjunction with autumn rains and before soil temperatures drop below germination levels.

Property Data Log*

Year: _____

	Topography	Roads	Water System	Natural Areas	Agriculture/Livestock
January					
February					
March					
April					
May					
June					
July					
August					
September					
October					
November					
December					

*Use the above log to record the date (day of the month) that monitoring occurred for each of the five property systems per the *Rural Property Seasonal Timeline* protocols. Use the following pages to record your monitoring observations and maintenance activities.

	Monitoring Observations	Maintenance Activities
Topography		
Roads		
Water System		
Natural Areas		
Ag/Livestock		

Measurement of Diverted Flow and Water Use Data

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Direct Diversion												
Diversion to Storage												
Total Diversion												
Domestic Use												
Irrigation Use[1] Direct												
Irrigation Use[1] Storage												
Total Use												

Irrigation Use[1]: Water use for cannabis cultivation only. Use attached water log to record daily irrigation rates.

Maximum Diversion Rate[2]

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Gallons per Minute												

Maximum Diversion Rate[2]: As measured with bypass valve, bucket and stopwatch or other method to measure gallons per minute.

Specific Water Diversion Agreements		
Maximum Diversion Rate		
Bypass Flow		
Seasonal Diversion Minimization		

2. Fertilizer, Pesticide, Herbicide and Rodenticide

Biological and Chemical Pest Management Plan
The use of repellants, insecticides, and fungicides will include products that are exempt from tolerance requirements, and either exempt from registration requirements, or have labels broad enough to include use on cannabis per California Food and Agriculture Code, Division 6 Pest Control Operations and Division 7 Agriculture Chemical; Chapter 1 - 3.6 and California Code of Regulations, Division 6 Pest Control Operations (Table 1).

Name	Active Ingredient(s)	Type
PM Wash	Water and silica	Mold and Mildew
Plant Therapy	Soy oil, peppermint essential oil, citric acid, soap, alcohol, sodium citrate, water.	Pesticide
Actinovate	Streptomyces lydicus	Biofungicide

Pesticides and fungicides will be stored off the ground in a completely enclosed shed within secondary containment. Applicant will store and use pesticides and fungicides according to the protocols it uses for pesticide storage and use. pesticides and fungicides will be kept in secondary containment totes to further prevent leaching. Applicant also has a metal storage container with a lockable lid for the disposal of pesticides and fungicides if necessary. Applicant will use all pesticides and fungicides according to the label and use personal protective equipment as required by labels. Applicant seeks out and uses pesticides and fungicides that are OMRI Certified and advertised as naturally-based. Before making a pesticide or fungicide application, operators will evaluate equipment, weather conditions, and the property to be treated and surrounding areas to determine the likelihood of substantial drift or harm to non-target crops, contamination, or the creation of a health hazard.

The applicant would comply with the following pesticide and fungicide application and storage protocols:

- ☐ Comply with all pesticide label directions;
- ☐ Store chemicals in their original containers in a secure building or shed to prevent access by wildlife;
- ☐ Chemicals in their original containers shall be placed in secondary containment;
- ☐ Chemical containers shall be handled with care to avoid destroying labels;
- ☐ Contain any chemical leaks and immediately clean up any spills;
- ☐ Preventing offsite drift;
- ☐ Do not apply pesticides when pollinators are present;
- ☐ Do not allow drift to flowering plants attractive to pollinators;

- ☐ Do not spray directly to surface water or allow pesticide product to drift to surface water;
- ☐ Spray only when wind is blowing away from surface water bodies;
- ☐ Do not apply pesticides when they may reach surface water or groundwater;
- ☐ Use only properly labeled pesticides; and
- ☐ Do not use pesticides within 100 feet of any spring, top of bank of any creek or seasonal stream, edge of lake, delineated wetland or vernal pool.

Fertilizer and Soil Amendments

Applicant will store and use fertilizers according to the protocols it uses for pesticide storage and use. Fertilizers will be kept in secondary containment totes to further prevent leaching. Applicant also has a metal drum with a lockable lid for the disposal of fertilizers if necessary. Applicant will use all fertilizers according to the label and use personal protective equipment as required by labels. Applicant seeks out and uses fertilizers that are OMRI Certified and advertised as naturally-based. Before making a fertilizer application, operators will evaluate equipment, weather conditions, and the property to be treated and surrounding areas to determine the likelihood of substantial drift or harm to non-target crops, contamination, or the creation of a health hazard.

Name	N-P-K Ratio	Yearly Use
Spartime Molassess	NA	3-gallons
Fish Meal	5-7-14	8-gallons
Dep Blend	2-6-2	400-gallons
Bat Guano	9-3-1	10-gallons
Organic Worm Castings	NA	600-lbs
Stutzman's Composted Chicken Manure	3-2-2	750-lbs

Cannabis Waste Management Plan

Cannabis vegetative waste will be composed onsite. In compliance with the California Code of Regulations (CCR), Title 3, Division 8, Chapter 1, Section 8108, the applicant has prepared a Cannabis Waste Management Plan (Appendix D).

3. Petroleum Product BPTC Measures

Hazardous Materials Management

Hazardous waste would be minimal, as the applicant would use biodegradable soap for cleaning hands and the work surfaces, plus chemicals would be of an organic

nature. The only hazardous materials would include gasoline for property maintenance equipment and backup generator, alcohol containers used for cleaning trimming tools, and nonfunctioning or old gasoline containers. If some of the out buildings needed paint that would be a domestic use. All hazardous waste would also be hauled to the Eureka Transfer Station. The applicant does not manufacture cannabis at the site. The only hazardous materials would be those listed in Section 6.b. and 6.d. fertilizers would be organic, and future use of repellants, insecticides, and fungicides will include products that are exempt from tolerance requirements, per California Food and Agriculture Code, Division 6 Pest Control Operations and Division 7 Agriculture Chemical; Chapter 1 - 3.6 and California Code of Regulations, Division 6 Pest Control Operations. Yard maintenance is a domestic requirement, therefore, fuels and the fueling of equipment is conducted in the materials shed. A proposed onsite spill kit, will be added to the shed. Gasoline and/or diesel will be stored in spill proof containers, and placed in secondary containment in case of accidental spills.

4. Trash/Refuse and Domestic Wastewater BPTC Measures

Solid Waste Management

Future solid waste will be minimized by buying items in bulk. This may include hauling soil from a local nursery in Eureka when soil replenishing is needed. Other reductions would include purchasing biodegradable planting pots in bulk. The applicant will work with vendors to reduce packaging when possible, or to recycle packaging through the manufacture. All earthen materials would likely be recycled and used at the project site. When needed, empty glass and plastic containers would be reused several times at the site for different purposes.

Solid waste deposal, storage, and compost and recycling will be conducted in compliance with Humboldt County Municipal Code. The applicant hauls his own solid waste once a week to the Eureka Transfer Station. The facility is opened at various times to the public throughout the week. The applicant has 3 securely covered garage containers. Yard waste would be reapplied to the land during mowing, and woody debris would be chipped and used for mulch on domestic plants and garden areas. Domestic recyclables would be stored in the single-family residence, and disposed of at the Eureka Transfer Station.

Appendix C.

Site Documentation			
State License #	**County License #**	**Assessor's Parcel #**	**Farm Name**
LCA18-0003323 LCA18-0003322	11947	522-031-006-000	Royal Leif Farms, LLC

Cannabis Waste Management Plan

Cannabis waste for this operation will be processed onsite (composted) as indicated on the Property Diagram.

Compost Facility Design

- Site must meet 200-foot setbacks[1] from any watercourse, wetland, spring or groundwater well.
- Site must not exceed 750 square feet.
- Site must be contained[2] to prevent surface runoff from leaving the site.
- Site must facilitate the infiltration of tailwater[3].
- Site must be monitored and maintained[5] to ensure the functionality of the composting process. These elements include but are not limited to:
  - temperature, moisture content, carbon to nitrogen ratio, and oxygen content.

Site Assessment	
Distance from nearest water feature.	>200-feet
Average slope.	12%
Distance from cultivation site.	50-feet
Site footprint (square feet).	200
Containment strategy.	Wattle
Infiltration strategy.	Swale and mulch
Type of composting system.	Static
Additives.	Straw
Amendments.	Straw

Setbacks[1]: If 200-feet is not possible then site must have redundant systems of discharge prevention and nutrient processing.
Contained[2]: Containment includes wattles, straw bales, berms, swales or vegetative buffer strips.
Infiltration of tailwater[3]: Stormwater should be excluded from the site (tarp, roof) as much as possible; however, redundant systems to infiltrate any tailwater (stormwater that has left the site) must be remediated and infiltrated.
Exclusionary fencing[4]: Fencing that excludes wildlife, domestic animals and unauthorized personnel.
Monitored and maintained[5]: Regularly scheduled monitoring for functionality and maintenance protocols (adding additives) to maintain functionality of the system. This includes keeping seasonal records of the composting process.

Composting Methods

Appendix C.

Green waste will be placed in the designated area as shown on the applicant's site map. The applicant may follow the Procedure for Managing the Three-Bin Composting System (University of California UCCE Cooperative Extension). The following steps are recommended when using this procedure:

1. Add yard waste to one of the end bins. Mix in "green" materials like grass clippings or other fresh plant waste with "brown" materials like dried leaves, wood chips or shredded branches.
2. If only a very little green waste is available, add about 1 cup of a fertilizer that contains some nitrogen, such as a 2-2-3 composted chicken manure or similar natural analysis fertilizer. Kitchen scraps or grass clippings will generally not need additional fertilizer since these already have a lot of nitrogen compared to carbon.
3. Add a layer of garden soil to introduce some of the microorganisms that do the composting.
4. Once the composting process is under way, it is not necessary to add more soil. Page-1
5. Check the temperature of the compost from time to time, ideally with a compost thermometer (see graphic). The pile should be warm in the middle. After the middle has reached 140 to 150°F, turn the pile from the original bin into the adjacent center bin.
6. Close monitoring of the temperature is essential only for the most rapid composting since the process will go on at varying rates even if close attention is not given to temperature.
7. Additional yard waste can be placed on the recently turned compost, but turn the pile back into the original end bin when the temperature has been up around 150°
8. Turning should be repeated whenever the temperature gets high enough. Over time, less frequent turning will be needed, and the composted material can be held in one of the end bins until you are ready to use it in the yard or garden.
9. Repeat the process using the vacant end bin and alternate turning between that bin and the center bin.
10. Use the compost in the original end bin until it is gone; then you can start the composting process again in the vacated end bin.
11. Once set up, the three-bin composting system will consist of one bin with yard waste being composted; one bin empty, to or from which the compost is turned; and one bin containing finished, or nearly finished, compost (see graphic).

Nearly 1 cubic yard of compost can be produced per bin in the three bin composting system. However, the rate of composting differs greatly according to the kinds of materials placed in the system and the precision with which you manage the composting process.

Title 14 of the California Code of Regulations at Chapter 3.1
Section 17855. Excluded Activities.

(a) Except as provided otherwise in this Chapter, the activities listed in this section do not constitute compostable material handling operations or facilities and are not required to meet the requirements set forth herein. Nothing in this section precludes the EA or the Department from inspecting an excluded activity to verify that the activity is being conducted in a manner that qualifies as an excluded activity or from taking any appropriate enforcement action.

(4) Composting green material, agricultural material, food material, and vegetative food material, alone or in combination, is an excluded activity if the total amount of feedstock and compost on-site at any one time does not exceed 100 cubic yards and 750 square feet.

§5055. Cannabis Waste Management

(a) A licensee may not sell cannabis waste.

(b) Licensees shall comply with all applicable waste management laws including, but not limited to, Division 30 of the Public Resources Code.

(c) A licensee shall dispose of cannabis waste in a secured waste receptacle or in a secured area on the licensed premises. For the purposes of this section, "secure waste receptacle" or "secured area" means that physical access to the receptacle or area is restricted to the licensee and its employees and the local agency, local agency franchiser, or permitted private waste hauler. Public access to the designated receptacle or area is prohibited.

(d) If a licensee is composting cannabis waste on the licensed premises, a licensee shall do so in compliance with *Title 14 of the California Code of Regulations at Chapter 3.1* (commencing with Section 17850).
(e) If a local agency, a local agency franchiser, or permitted private waste hauler is being used to collect and process cannabis waste, a licensee shall do all the following:
(1) Provide the Bureau with the name of the entity hauling the waste;
(2) Obtain documentation from the entity hauling the waste that indicates the date and time of each collection of cannabis waste at the licensed premises; and
(3) Obtain a copy of the certified weight ticket, or other documentation prepared by the entity hauling the waste confirming receipt of the cannabis waste.
(f) If a licensee is self-hauling cannabis waste to one, or more, of the solid waste facilities in subsection (e)(3) of this section, a licensee shall obtain for each delivery of cannabis waste by the licensee a copy of a certified weight ticket or receipt documenting delivery from the solid waste facility. Only the licensee or its employees may transport self-hauled cannabis waste.
Authority: Section 26013, Business and Professions Code. Reference: Section 26070, Business and Professions Code.

Title 14 of the California Code of Regulations at Chapter 3.1
Section 17867. General Operating Standards.
(a) All compostable materials handling operations and facilities shall meet the following requirements:
(1) All handling activities are prohibited from composting any material specified in section 17855.2 of this Chapter.
(2) All handling activities shall be conducted in a manner that minimizes odor impacts so as to not cause a nuisance.
(3) All handling activities shall be conducted in a manner that minimizes vectors, litter, hazards, nuisances, and noise impacts; and minimizes human contact with, inhalation, ingestion, and transportation of dust, particulates, and pathogenic organisms.
(4) Random load checks of feedstocks, additives, and amendments for contaminants shall be conducted.
(5) Contamination of compostable materials that has undergone pathogen reduction, pursuant to section 17868.3 of this Chapter, with feedstocks, compost, or wastes that have not undergone pathogen reduction, pursuant to section 17868.3 of this Chapter, or additives shall be prevented.
(6) Unauthorized human or animal access to the facility shall be prevented.
(7) Traffic flow into, on, and out of the composting operation or facility shall be controlled in a safe manner.
(9) The operator shall provide fire prevention, protection and control measures, including, but not limited to, temperature monitoring of windrows and piles, adequate water supply for fire suppression, and the isolation of potential ignition sources from combustible materials. Firelanes shall be provided to allow fire control equipment access to all operation areas.
(10) The operator shall provide telephone or radio communication capability for emergency purposes.
(11) Physical Contaminants and refuse removed from feedstock, compost, or chipped and ground material shall be removed from the site within 7 days and transported to an appropriate facility.
(12) Enclosed operations and facilities shall provide ventilation to prevent adverse public health effects from decomposition gases.
(13) The operator shall ensure that leachate is controlled to prevent contact with the public.
(14) The operator shall prevent or remove physical contaminants in compost and chipped and ground materials that may cause injury to humans.

Definitions
(1) "Active Compost" means compost feedstock that is in the process of being rapidly decomposed and is unstable. Active compost is generating temperatures of at least 50 degrees Celsius (122 degrees Fahrenheit) during decomposition; or is releasing carbon dioxide at a rate of at least 15 milligrams per gram of compost per day, or the equivalent of oxygen uptake.
(2) "Additives" means material mixed with feedstock or active compost in order to adjust the moisture level, carbon to nitrogen ratio, or porosity to create a favorable condition. Additives include, but are not limited to, fertilizers and urea. Additives do not include septage, biosolids, or compost feedstock.
(3) "Aerated Static Pile" means a composting process that uses an air distribution system to either blow or draw air through the pile. Little or no pile agitation or turning is performed.
(4) "Aerobic Decomposition" means the biological decomposition of organic substances in the presence of oxygen.
(4.5) "Agricultural By-Product Material" means post-harvest agricultural by-products separated at a processing facility.

Appendix C.

(A) Agricultural By-product Material includes, but is not limited to, solid or semi-solid materials from fruit, nut, cotton, and vegetable processing facilities such as stems, leaves, seeds, nut hulls and shells, peels, and off-grade, over-ripe, or under-ripe produce.

(B) Agricultural By-product Material does not contain packaging material, physical contaminants, or hazardous materials, and does not include wastewater, sludges, or additives.

(5) "Agricultural Material" means waste material of plant or animal origin, which results directly from the conduct of agriculture, animal husbandry, horticulture, aquaculture, silviculture, vermiculture, viticulture and similar activities undertaken for the production of food or fiber for human or animal consumption or use, which is separated at the point of generation, and which contains no other solid waste. With the exception of grape pomace or material generated during nut or grain hulling, shelling, and processing, agricultural material has not been processed except at its point of generation and has not been processed in a way that alters its essential character as a waste resulting from the production of food or fiber for human or animal consumption or use. Material that is defined in this section 17852 as "food material" or "vegetative food material" is not agricultural material. Agricultural material includes, but is not limited to, manures, orchard and vineyard prunings, grape pomace, and crop residues.

(7) "Amendments" means materials added to stabilized or cured compost to provide attributes for certain compost products, such as product bulk, product nutrient value, product pH, and soils blend. Amendments do not include septage, biosolids, or compost feedstock.

(8) "Anaerobic Decomposition" means the biological decomposition of organic substances in the absence of oxygen.

(11) "Compostable Material" means any organic material that when accumulated will become active compost as defined in section 17852(a)(1).

(13) "Curing" means the final stage of the composting process that occurs after compost has undergone pathogen reduction, as described in section 17868.3, and after most of the readily metabolized material has been decomposed.

(17) "Enclosed Composting Process" means a composting process where the area that is used for the processing, composting, stabilizing, and curing of organic materials, is covered on all exposed sides and rests on a stable surface with environmental controls for moisture and airborne emissions present.

(20) "Food Material" means a waste material of plant or animal origin that results from the preparation or processing of food for animal or human consumption and that is separated from the municipal solid waste stream. Food material includes, but is not limited to, food waste from food facilities as defined in Health and Safety Code section 113789 (such as restaurants), food processing establishments as defined in Health and Safety Code section 111955, grocery stores, institutional cafeterias (such as, prisons, schools and hospitals) and residential food scrap collection. Food material does not include any material that is required to be handled only pursuant to the California Food and Agricultural Code and regulations adopted pursuant thereto.

(A) "Vegetative Food Material" means that fraction of food material, defined above, that is a plant material and is separated from other food material and the municipal solid waste stream. Vegetative food material may be processed or cooked but must otherwise retain its essential natural character and no salts, preservatives, fats or oils, or adulterants shall have been added. Vegetative food material includes, but is not limited to, fruits and vegetables, edible flowers and plants, outdated and spoiled produce, and coffee grounds. Vegetative food material contains no greater than 1.0 percent of physical contaminants by dry weight, and meets the requirements of section 17868.5.

(21) "Green Material" means any plant material except food material and vegetative food material that is separated at the point of generation, contains no greater than 1.0 percent of physical contaminants by dry weight, and meets the requirements of section 17868.5. Green material includes, but is not limited to tree and yard trimmings, untreated wood wastes, natural fiber products, wood waste from silviculture and manufacturing, and construction and demolition wood waste. Green material does not include food material, vegetative food material, biosolids, mixed material, material separated from commingled solid waste collection or processing, wood containing lead-based paint or wood preservative, or mixed construction and demolition debris. Agricultural material, as defined in this section 17852(a)(5), that meets this definition of "green material" may be handled as either agricultural material or green material.

(32) "Physical Contamination" or "Contaminants" means human-made inert material contained within compostable material, digestate, or compost, including, but not limited to, glass, metal, and plastic.

(37) "Static Pile" means a composting process that is similar to the aerated static pile except that the air source may or may not be controlled.

(40) "Windrow Composting Process" means the process in which compostable material is placed in elongated piles. The piles or "windrows" are aerated and/or mechanically turned on a periodic basis.

(43) "Yard Trimmings" means any wastes generated from the maintenance or alteration of public, commercial or residential landscapes including, but not limited to, yard clippings, leaves, tree trimmings, prunings, brush, and weeds.

Waste and Materials Management

a. Solid Waste Management

Solid waste deposal, storage, compost and recycling will be conducted in compliance with Humboldt County Municipal Code. The applicant delivers solid waste as needed to the Eureka Transfer Station. The solid waste is stored based on specific materials protocols. Domestic waste and recyclables would be stored and disposed of at the Eureka Transfer Station. All materials are secured from wildlife.

b. Hazardous Materials Management

Hazardous waste would be restricted to the materials outlined in the fertilizers, amendments, and pesticides data and use table as well as materials associated with domestication and property management. All hazardous waste would be hauled to the Eureka Transfer Station. The applicant does not manufacture cannabis at the site. Fertilizers would be natural or organic if possible, and future use of repellants, insecticides, and fungicides will include products that are exempt from tolerance requirements, per California Food and Agriculture Code, Division 6 Pest Control Operations and Division 7 Agriculture Chemical; Chapter 1 - 3.6 and California Code of Regulations, Division 6 Pest Control Operations.

Spill Prevention Protocols

1. Hazardous materials will be transported in approved containers with secondary containment.
2. Hazardous materials will be transferred by individuals who are familiar with the specific MSDS requirements.
3. Hazardous materials must be stored in a secure structure. Agricultural-based materials must be stored in a separate facility from gas, oil and other domestic based chemicals.
4. Materials Safety Data Sheets must be posted and appropriate spill kits must be stored in the corresponding storage facility.
5. All hazardous materials must be stored in secondary containment.
6. Power equipment that requires gas/oil should be kept in good working condition. The refueling and maintenance of power equipment should take place in the corresponding storage or maintenance facility.
7. Power equipment such as gasoline/diesel generators must be placed in certified secondary containment under a secure structure.
8. Appropriate fire suppression must be associated with all material storage facilities that store flammable materials.

Spill Clean Up Protocol (liquids)

1. Applicator should wear gloves, safety goggles, and a dust mask during cleanup.
2. Reference the associated MSDS for specific cleanup protocols.
3. Confine the leaking or spilled container to secondary containment.
4. Spread clay-based, "clumping kitty-litter" on the spill site at a rate of 1/2"-thick.
5. Allow litter to dry.
6. Use a flat-nosed shovel and broom to pickup the dry litter and double bag it.

7. Take to a licensed hazardous waste disposal facility.

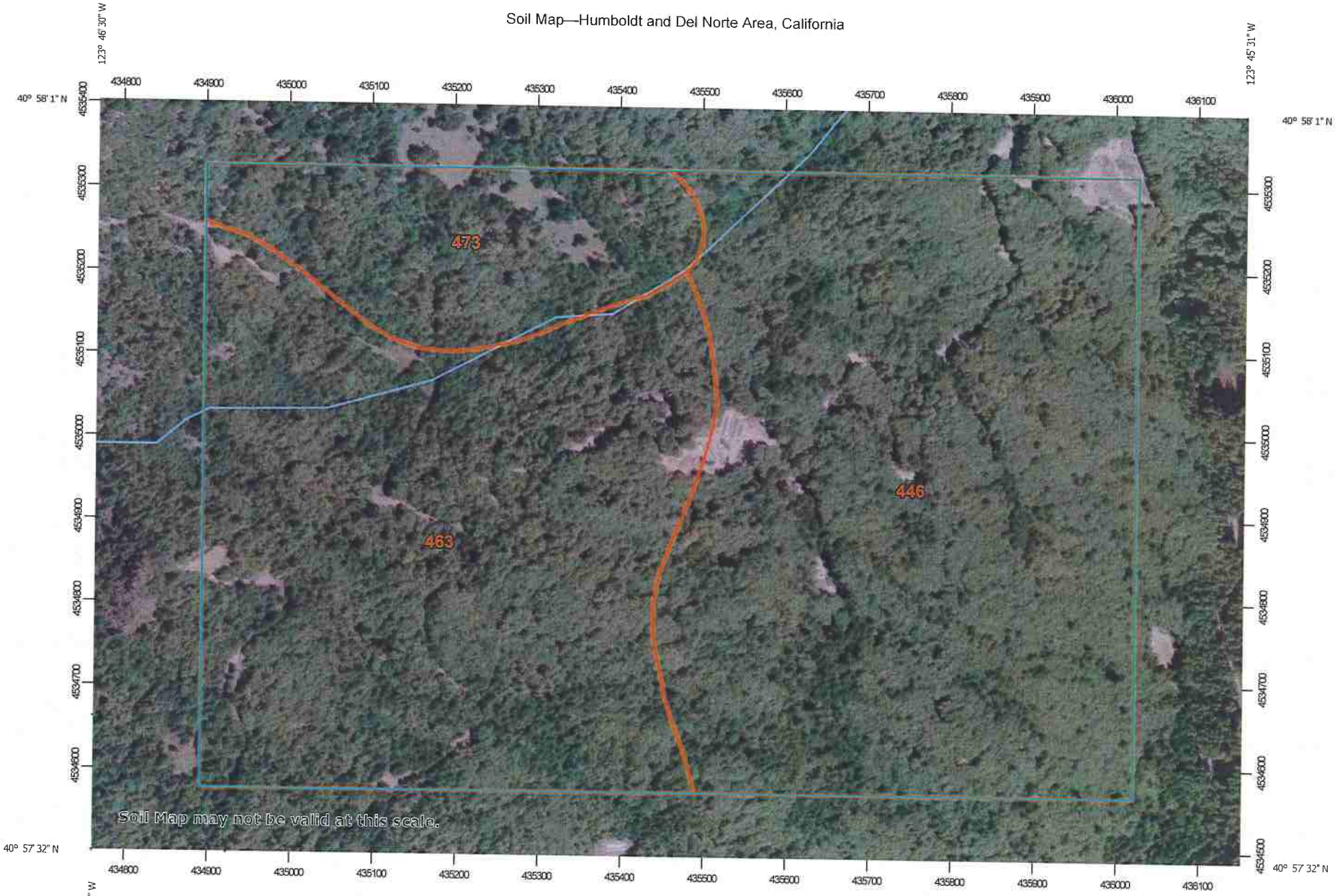
Spill Clean Up Protocol (solids)

1. Applicator should wear gloves, safety goggles, and a dust mask during cleanup.
2. Reference the associated MSDS for specific cleanup protocols.
3. Confine the leaking or spilled container to secondary containment.
4. Use a flat-nosed shovel and broom to pickup the dry material.
5. Repackage materials that are safe to still use or take to a licensed hazardous waste disposal facility.

c. Bulk Agricultural Materials

The following protocols identify how bulk materials will be stored, mixed applied and how empty containers will be disposed of.

1. Areas will be outside of the minimum setbacks from surface water.
2. Materials for containment, covering and the clean up of bulk materials will be onsite prior to delivery.
3. Individuals responsible for receiving deliveries, storing, mixing and applying materials will be familiar with the specific MSDS requirements.
4. Materials will be stored, mixed and applied per manufactures recommendations.
5. Delivery sites will be cleaned and secured after materials are deployed per specific clean up protocols.
6. Empty containers will be returned, recycled or disposed of based on manufacturers recommendations.



Map Scale: 1:6,350 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 300 600 1200 1800

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Humboldt and Del Norte Area, California
Survey Area Data: Version 13, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Oct 11, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
446	Bagaul-Burroin-Redtop complex, 15 to 50 percent slopes	101.2	48.2%
463	Mooncreek-Noisy-Sidehill complex, 30 to 75 percent slopes	84.6	40.3%
473	Highoaks-Noisy-Mudhorse complex, 9 to 50 percent slopes	24.3	11.5%
Totals for Area of Interest		**210.1**	**100.0%**

Humboldt and Del Norte Area, California

446—Bagaul-Burroin-Redtop complex, 15 to 50 percent slopes

Map Unit Setting

National map unit symbol: mg9f
Elevation: 150 to 4,560 feet
Mean annual precipitation: 49 to 80 inches
Mean annual air temperature: 50 to 59 degrees F
Frost-free period: 150 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Bagaul and similar soils: 35 percent
Burroin and similar soils: 30 percent
Redtop and similar soils: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bagaul

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium and residuum derived from phyllite and schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 20 inches: gravelly loam
Bt1 - 20 to 48 inches: gravelly clay loam
Bt2 - 48 to 61 inches: gravelly clay loam

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Burroin

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Colluvium and residuum derived from schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 6 inches: loam
Bt1 - 6 to 12 inches: clay loam
Bt2 - 12 to 24 inches: gravelly clay loam
BCt - 24 to 33 inches: extremely gravelly loam
R - 33 to 43 inches: bedrock

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: 20 to 39 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Redtop

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Colluvium and residuum derived from schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 10 inches: loam
AB - 10 to 20 inches: clay loam
Bt - 20 to 61 inches: clay loam

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Hullygully

Percent of map unit: 10 percent
Landform: Landslides, mountain slopes, colluvial aprons
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: No

Rock outcrop

Percent of map unit: 5 percent
Landform: Bluffs
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Data Source Information

Soil Survey Area: Humboldt and Del Norte Area, California
Survey Area Data: Version 13, Sep 16, 2019

Humboldt and Del Norte Area, California

473—Highoaks-Noisy-Mudhorse complex, 9 to 50 percent slopes

Map Unit Setting

National map unit symbol: 17ktl
Elevation: 110 to 3,940 feet
Mean annual precipitation: 49 to 80 inches
Mean annual air temperature: 50 to 59 degrees F
Frost-free period: 150 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Highoaks and similar soils: 30 percent
Noisy and similar soils: 25 percent
Mudhorse and similar soils: 15 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Highoaks

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Colluvium and residuum derived from sandstone and mudstone

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 9 inches: gravelly loam
Bt1 - 9 to 31 inches: silty clay loam
Bt2 - 31 to 50 inches: gravelly silty clay loam
BCt - 50 to 63 inches: extremely paragravelly silty clay loam

Properties and qualities

Slope: 9 to 50 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: Oregon white oak/perrenial and annual grasses, mountain slopes, sandstone and mudstone, clay l (F004BX114CA)
Hydric soil rating: No

Description of Noisy

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Colluvium and residuum derived from sandstone and mudstone

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: very gravelly loam
Bt - 5 to 39 inches: very gravelly clay loam
C - 39 to 63 inches: extremely gravelly clay loam

Properties and qualities

Slope: 9 to 50 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: Oregon white oak/perrenial and annual grasses, mountain slopes, sandstone and mudstone, clay l (F004BX114CA)
Hydric soil rating: No

Description of Mudhorse

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Colluvium and residuum derived from sandstone and mudstone

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: gravelly loam
AB - 5 to 12 inches: loam
Bt - 12 to 19 inches: clay loam
Btg - 19 to 79 inches: clay loam

Properties and qualities

Slope: 9 to 50 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 20 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C/D
Ecological site: Oregon white oak/perrenial and annual grasses, mountain slopes, sandstone and mudstone, clay l (F004BX114CA)
Hydric soil rating: No

Minor Components

Hullygully

Percent of map unit: 10 percent
Landform: Colluvial aprons, landslides, mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: No

Oakside

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex

Ecological site: Douglas-fir-canyon live oak/Pacific poison oak-tanoak/common whipplea, mountain slopes, phyllite and schist, very grav (F005XB107CA)
Hydric soil rating: No

Sidehill
Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: Douglas-fir-tanoak/tanoak, mountain slopes, sandstone and mudstone, very g (F005XB102CA)
Hydric soil rating: No

Rock outcrop
Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Darkwoods
Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: Douglas-fir-tanoak/tanoak-California hazelnut, mountain slopes, phyllite and schist, loam and (F005XB108CA)
Hydric soil rating: No

Data Source Information

Soil Survey Area: Humboldt and Del Norte Area, California
Survey Area Data: Version 13, Sep 16, 2019

Humboldt and Del Norte Area, California

463—Mooncreek-Noisy-Sidehill complex, 30 to 75 percent slopes

Map Unit Setting

National map unit symbol: 2ll5t
Elevation: 60 to 4,710 feet
Mean annual precipitation: 49 to 80 inches
Mean annual air temperature: 50 to 59 degrees F
Frost-free period: 150 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Mooncreek and similar soils: 35 percent
Noisy and similar soils: 20 percent
Sidehill and similar soils: 20 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mooncreek

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium and residuum derived from sandstone and mudstone

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 8 inches: very gravelly loam
BAt - 8 to 16 inches: gravelly loam
Bt1 - 16 to 26 inches: gravelly clay loam
Bt2 - 26 to 62 inches: very paragravelly clay loam

Properties and qualities

Slope: 30 to 75 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 9.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: Douglas-fir/tanoak, mountain slopes, sandstone and mudstone, clay l (F005XB101CA)
Hydric soil rating: No

Description of Noisy

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Colluvium and residuum derived from sandstone

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A1 - 2 to 7 inches: very gravelly loam
A2 - 7 to 12 inches: gravelly loam
Bt - 12 to 39 inches: extremely cobbly loam
C/Bt - 39 to 63 inches: extremely gravelly loam

Properties and qualities

Slope: 30 to 75 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Douglas-fir-tanoak/tanoak, mountain slopes, sandstone and mudstone, very g (F005XB102CA)
Hydric soil rating: No

Description of Sidehill

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex

Across-slope shape: Convex
Parent material: Colluvium and residuum derived from sandstone

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
Oe - 2 to 6 inches: moderately decomposed plant material
A - 6 to 18 inches: extremely gravelly sandy loam
Bw - 18 to 33 inches: very gravelly loam
R - 33 to 43 inches: bedrock

Properties and qualities

Slope: 30 to 75 percent
Depth to restrictive feature: 20 to 39 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: Douglas-fir-tanoak/tanoak, mountain slopes, sandstone and mudstone, very g (F005XB102CA)
Hydric soil rating: No

Minor Components

Oakside

Percent of map unit: 8 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: Douglas-fir-canyon live oak/Pacific poison oak-tanoak/common whipplea, mountain slopes, phyllite and schist, very grav (F005XB107CA)
Hydric soil rating: No

Darkwoods

Percent of map unit: 7 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: Douglas-fir-tanoak/tanoak-California hazelnut, mountain slopes, phyllite and schist, loam and (F005XB108CA)

Hydric soil rating: No

Rock outcrop

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Tossup

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: Douglas-fir/tanoak, mountain slopes, sandstone and mudstone, clay l (F005XB101CA)
Hydric soil rating: No

Data Source Information

Soil Survey Area: Humboldt and Del Norte Area, California
Survey Area Data: Version 13, Sep 16, 2019

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.

BMPs for Site Maintenance and Operations (per standard conditions)

The following BMPs are intended to address compliance with the standard conditions. Individual or multiple BMPS may be selected to address compliance with a given standard condition depending on site-specific conditions. BMPs are considered enforceable conditions as applicable to a given site.

A. Site Maintenance, Erosion Control, Drainage Features

70. Drainage of roads, clearings, fill prisms, and terraced areas is critical to ensuring their integrity and to prevent or minimize sediment discharges to watercourses. Proper design and location of roads and other features is critical to ensuring that a road or other feature be adequately drained and is best accomplished through consultation with a qualified professional. If inspection identifies surface rills or ruts, surfacing and drainage likely needs maintenance.

71. Surfacing of exposed/disturbed/bare surfaces can greatly reduce erosion associated with runoff. BMP features such as vegetative ground cover, straw mulch, slash, wood chips, straw wattles, fiber rolls, hay bales, geotextiles, and filter fabric fences may be combined and implemented on exposed/disturbed/bare surfaces as appropriate to prevent or minimize sediment transport and delivery to surface waters. Non-invasive, non-persistent grass species (e.g. barley grass) may be used for their temporary erosion control benefits to stabilize bare slopes and prevent exposure of bare soils to rainfall. If utilized, straw mulch shall be applied at a rate of 2 tons per acre of exposed soils and, if warranted by site conditions, shall be secured to the ground. Consultation with a qualified professional is recommended for successful site-specific selection and implementation of such surface treatments. Guidance literature pertaining to such BMPs is referenced in section IV. of this document.

72. Road surfacing, especially within a segment leading to a watercourse, is critical to prevent and minimize sediment delivery to a watercourse and maintain road integrity for expected uses. Road surfacing can include pavement, chip-seal, lignin, rock, or other material appropriate for timing and nature of use. Steeper sections of road require higher quality rock (e.g. crushed angular versus river- run) to remain in place.

73. Road shaping to optimize drainage includes out-sloping and crowning; shaping can minimize reliance on inside ditches. Drainage structures can include rolling dips and water bars within the road surface and ditch-relief culverts to drain inside ditches. Adequate spacing of drainage structures is critical to reduce erosion associated with runoff. Generally speaking, steep slopes require greater frequency of drainage structures. The drainage structures shall be maintained to ensure capture of and capacity for expected flow. The outlets of the structures shall be placed in such a manner as to avoid discharge onto fill, unstable areas, or areas that can enter a watercourse. If site conditions prohibit drainage structures at an adequate interval to avoid erosion, bioengineering techniques2 are the preferred solution (e.g. live fascines), but other techniques may also be appropriate including armoring (i.e. 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). In the case that inside ditches need maintenance, grade ditches only when and where necessary, since frequent routine mechanical grading can cause erosion of the ditch, undermine banks, and expose the toe of the cutslope to erosion. Do not remove more leaves and vegetation than necessary to keep water moving, as vegetation prevents scour and filters out sediment.

74. Road drainage shall be discharged to a stable location away from a watercourse. Use sediment control devices, such as check dams, sand/gravel bag barriers, and other acceptable techniques, when it is neither practical nor environmentally sound to disperse ditch water immediately before the ditch reaches a stream. Within areas with potential to discharge to a watercourse (i.e. within riparian areas of at least 200 feet of a stream) road surface drainage shall be filtered through vegetation, slash, or other appropriate material or settled into a depression with an outlet with adequate drainage. Caution should always be exercised with catchment basins in the event of failure.

75. Any spoils associated with site maintenance shall be placed in a stable location where it cannot enter a watercourse. Sidecasting shall be minimized and shall be avoided on unstable areas or where it has the potential to enter a watercourse.

76. Do not sidecast when the material can enter the stream directly or indirectly as sediment. Sidecast material can indirectly enter the stream when placed in a position where rain or road runoff can later deliver it to a channel

that connects with the stream.

77. Disconnect road drainage from watercourses (drain to hill slopes), install drainage structures at intervals to prevent erosion of the inboard ditch or gull formation at the hill slope outfall, outslope roads.

78. Ditch-relief culverts shall also be inspected regularly, and cleared of debris and sediment. To reduce plugging, 15 to 24-inch diameter pipes shall be the minimum size considered for ditch relief culverts and shall be informed by site-specific conditions.

79. Grade ditches only when and where necessary, since frequent routine mechanical grading can cause erosion of the ditch, undermine banks, and expose the toe of the cutslope to erosion. Do not remove more grass and weeds than necessary to keep water moving, as vegetation prevents scour and filters out sediment.

80. Use sediment control devices, such as check dams, sand/gravel bag barriers, and other acceptable techniques, when it is neither practical nor environmentally sound to disperse ditch water immediately before the ditch reaches a stream.

B. Stream Crossing Maintenance

81. Proper maintenance of stream crossings is critical to ensure support of beneficial uses of water. Regular inspection and maintenance is necessary to identify, in a timely manner, if problems are occurring. Crossings include rock fords3, armored fills with culverts3, and bridges3.

82. Rock fords are appropriate when temporary and minor moisture or over-land flow is expected, not typically when a bed and bank is present; exceptions may be justified if warranted by site specific conditions. Additionally, rock fords are appropriate if aquatic life is not present. An adequate layer of crushed angular rock shall be maintained at rock fords such that soil compaction is minimized under expected traffic levels.

83. Stream crossings consisting of armored fills with culverts and bridges are appropriate for streams with defined bed and bank2. They shall be sized to ensure the 100-year streamflow event can pass unimpeded. Additionally, crossings shall allow migration of aquatic life during all life stages potentially supported by that stream reach; water depth and velocity can inhibit migration of adult and juvenile fish species.

84. Stream crossing design and installation is best accomplished with the assistance of a qualified professional. Site conditions can change over time (e.g. channel filling or incision); consultation with a qualified professional is appropriate to evaluate maintenance or replacement needs and opportunities.

85. Regular inspection of the stream crossing is appropriate to identify changed conditions within the stream channel (e.g., bank erosion, headward incision, and channel filling).

86. The roadway adjacent to and over the crossing is an area of potential discharge. All road surfaces approaching a crossing shall be drained before the crossing, adequately filtered through vegetation or other material, and not discharged to a watercourse. If turbid water is discharged at a stream crossing, additional measures to control erosion at the source(s) or to remove sediment prior to discharge shall be implemented. Road surfaces shall be of rock, pavement, or other material appropriate for type and level of use.

87. If a culvert is used, the approaches and fill slopes shall be properly compacted during installation and shall be stabilized with rock or other appropriate surface protection to minimize surface erosion and slumping to the receiving waters. If possible, the road surface over the culvert shall have a critical-dip to ensure that if the culvert becomes plugged, water can flow over the road surface without washing away the fill prism. If site-specific conditions do not allow for a critical dip, alternatives such as emergency overflow culverts, oversized culvers, flared inlets, and debris racks may be warranted.

C. Riparian and Wetland Protection and Management:

88. Buffer width will be in compliance with Tier category.

89. Trees within riparian areas shall be retained for natural recruitment to streams. Large woody debris (LWD) shall be retained in stream or within riparian areas. The size of wood that can be beneficial to the stream will vary

depending on the size of the stream (i.e., larger pieces of wood are necessary to withstand flows in large streams). In the event that LWD or trees are disturbed during excavation, care shall be taken to separate the LWD from soil. The pieces shall be stockpiled separately until they can be replaced in appropriate locations to enhance instream or riparian conditions. Placement of instream wood for habitat enhancement should be done under the consultation of a qualified professional and in conformance with applicable regulatory permits.

90. Avoidance of disturbance in riparian areas (within 200 feet of a watercourse) should result in protection and restoration of the quality/health of the riparian stand so as to promote: 1) shade and microclimate controls; 2) delivery of wood to channels, 3) slope stability and erosion control, 4) ground cover, and 5) removal of excess nutrients. This recognizes the importance of the riparian zone with respect to temperature protection, sediment delivery, its importance with respect to the potential for recruitment of large wood, and removal of nutrients transported in runoff. In the event that past disturbance has degraded riparian conditions, replanting with native species capable of establishing a multi-storied canopy will ensure these riparian areas can perform these important ecologic functions.

D. Spoils Management

To ensure spoil pile stability and to reduce the potential for spoil pile slope failure or transport to waters of the state, the following measures shall be implemented when placing or disposing of spoils onsite:

91. Rip compacted soils prior to placing spoils to prevent the potential for ponding under the spoils that could result in spoil site failure and subsequent sedimentation;

92. Compact and contour stored spoils to mimic the natural slope contours and drainage patterns to reduce the potential for fill saturation and failure;

93. Ensure that spoil materials are free of woody debris, and not placed on top of brush, logs or trees.

94. Spoils shall not be placed or stored in locations where soils are wet or unstable, or where slope stability could be adversely affected.

95. Do not locate spoil piles in or immediately adjacent to wetlands and watercourses.

96. Store spoil piles in a manner (e.g. cover pile with plastic tarps and surround base of pile with straw wattle) or location that would not result in any runoff from the spoil pile ending up in wetlands and watercourses.

97. Separate organic material (e.g., roots, stumps) from the dirt fill and store separately. Place this material in long-term, upland storage sites, as it cannot be used for fill.

98. Keep temporary disposal sites out of wetlands, adjacent riparian corridors, and ordinary high water areas as well as high risk zones, such as 100-year floodplain and unstable slopes.

99. After placement of the soil layer, track walk the slopes perpendicular to the contour to stabilize the soil until vegetation is established. Track walking creates indentations that trap seed and decrease erosion of the reclaimed surfaces.

100. Revegetate the disposal site with a mix of native plant species. Cover the seeded and planted areas with mulched straw at a rate of 2 tons per acre. Apply jute netting or similar erosion control fabric on slopes greater than 2:1 if site is erosive.

E. Water Storage and Use

WATER USE

101. Conduct operations on a size and scale that considers available water sources and other water use and users in the planning watershed.

102. Implement water conservation measures such as rainwater catchment systems, drip irrigation, mulching, or irrigation water recycling. (Also see BMPs for Irrigation, below)

103. Take measures to minimize water diversion during low flow periods.

104. Options for documentation of water diversions and/or water usage may include the use of water meter devices and date-stamped photographs of water meter readings.

105. Hauled water utilized for irrigation shall be documented via receipt or similar, and show the date, name, and license plate of the water hauler, and the quantity of water purchased.

106. Apply water at agronomic rates (do not overwater plants).

WATER STORAGE

107. If using a water storage tank, do not locate the tank in a flood plain or next to equipment that generates heat. Locate the tank so it is easy to install, access, and maintain.

108. Vertical tanks should be installed according to manufacturer's specifications and placed on firm, compacted soil that is free of rocks/sharp objects and capable of bearing the weight of the tank and its maximum contents. In addition, a sand or pea gravel base with provisions for preventing erosion is highly recommended. Installation sites for tanks 8,000 gallons or more must be 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), especially where seismic or large wind forces are present.

109. Horizontal tanks shall be secured with bands and/or hoops to prevent tank movement.

110. Design and construct storage ponds in properly sited locations, off-stream. Plant vegetation along the perimeter of the pond. Construct berms or excess freeboard space around the perimeter of the pond to allow for sheet flow inputs.

111. Provide adequate outlet drainage for overflow of ponds, including low impact designs, to promote dispersal and infiltration of flows.

112. Place proper lining or sealing in ponds to prevent water loss.

113. Storage bladders are not encouraged for long term water storage reliability. If they are utilized, ensure that they are designed to store water, and that they are sited to minimize potential for water to flow into a watercourse in the event of a catastrophic failure. Used bladders (e.g. military surplus bladders) shall be checked for interior residual chemicals and integrity prior to use. Inspect bladder and containment features periodically to ensure integrity.

F. Irrigation Runoff

114. Irrigate at rates to avoid or minimize runoff.

115. Regularly inspect for leaks in mains and laterals, in irrigation connections, or at the ends of drip tape and feeder lines. Repair any found leaks.

116. Design irrigation system to include redundancy (i.e., safety valves) in the event that leaks occur, so that waste of water is prevented and minimized.

117. Recapture and reuse irrigation runoff (tailwater) where possible, through passive (gravity-fed) or active (pumped) means.

118. Construct retention basins for tailwater infiltration; percolation medium may be used to reduce pollutant concentration in infiltrated water. Constructed treatment wetlands may also be effective at reducing nutrient loads in water. Ensure that drainage and/or infiltration areas are located away from unstable or potentially unstable features.

119. Regularly replace worn, outdated or inefficient irrigation system components and equipment.

120. Use mulches (e.g. wood chips or bark) in cultivation areas that do not have ground cover to prevent erosion and minimize evaporative loss.

121. Leave a vegetative barrier along the property boundary and interior watercourses to act as a pollutant filter.

122. Employ rain-triggered shutoff devices to prevent irrigation after precipitation.

G. Fertilizers, Soil Amendments, Pesticides, Petroleum Products, and Other Chemicals

123. Evaluate irrigation water, soils, growth media, and plant tissue to optimize plant growth and avoid over-fertilization.

124. Reference Department of Pesticide Regulations Guidance (see Attachments E-1 and E-2 of Order No. R1-2015-0023)

125. All chemicals shall be stored in a manner, method, and location that ensures that there is no threat of discharge to waters of the state.

126. Products shall be labeled properly and applied according to the label.

127. Use integrated pest management strategies that apply pesticides only to the area of need, only when there is an economic benefit to the grower, and at times when runoff losses are least likely, including losses of organic matter from dead plant material.

128. Periodically calibrate pesticide application equipment.

129. Use anti-backflow devices on water supply hoses, and other mixing/loading practices designed to reduce the risk of runoff and spills.

130. Petroleum products shall be stored with a secondary containment system.

131. Throughout the rainy season, any temporary containment facility shall have a permanent cover and side-wind protection, or be covered during non-working days and prior to and during rain events.

132. Materials shall be stored in their original containers and the original product labels shall be maintained in place in a legible condition. Damaged or otherwise illegible labels shall be replaced immediately.

133. Bagged and boxed materials shall be stored on pallets and shall not be allowed to accumulate on the ground. To provide protection from wind and rain throughout the rainy season, bagged and boxed materials shall be covered during non- working days and prior to rain events.

134. Have proper storage instructions posted at all times in an open and conspicuous location.

135. Prepare and keep onsite a Spill Prevention, Countermeasures, and Cleanup Plan (SPCC Plan) if applicable4.

136. Keep ample supply of appropriate spill clean-up material near storage areas.

H. Cultivation-Related Wastes

137. Cultivation-related waste shall be stored in a place where it will not enter a stream. Soil bags and other garbage shall be collected, contained, and disposed of at an appropriate facility, including for recycling where available. Pots shall be collected and stored where they will not enter a waterway or create a nuisance. Plant waste and other compostable materials be stored (or composted, as applicable) at locations where they will not enter or be blown into surface waters, and in a manner that ensures that residues and pollutants within those materials do not migrate or leach into surface water or groundwaters.

138. Imported soil for cultivation purposes shall be minimized. The impacts associated with importation of soil include, but are not limited to increased road maintenance and the increased need for spoils management. Use of compost increases the humic acid content and water retention capacity of soils while reducing the need for fertilizer application. In

the event that containers (e.g. grow bags or grow pots) are used for cultivation, reuse of soil shall be maximized to the extent feasible.

139. Spent growth medium (i.e. soil and other organic medium) shall be handled to minimize discharge of soil and residual nutrients and chemicals to watercourses. Proper handling of spent soil could include incorporating into garden beds, spreading on a stable surface and revegetation, storage in watertight dumpsters, covering with tarps or plastic sheeting prior to proper disposal, and use of techniques to reduce polluted runoff described under Item F. Irrigation Runoff.

140. Other means of handling cultivation-related waste may be considered on a site- specific basis.

I. Refuse and Human Waste

141. Trash containers of sufficient size and number shall be provided and properly serviced to contain the solid waste generated by the project. Provide roofs, awnings, or attached lids on all trash containers to minimize direct precipitation and prevent rainfall from entering containers. Use lined bins or dumpsters to reduce leaking of liquid waste. Design trash container areas so that drainage from adjoining roofs and pavement is diverted around the area(s) to avoid run-on. This might include berming or grading the waste handling area to prevent run-on of stormwater. Make sure trash container areas are screened or walled to prevent off-site transport of trash. Consider using refuse containers that are bear-proof and/or secure from wildlife. Refuse shall be removed from the site on a frequency that does not result in nuisance conditions, transported in a manner that they remain contained during transport, and the contents shall be disposed of properly at a proper disposal facility.

142. Ensure that human waste disposal systems do not pose a threat to surface or ground water quality or create a nuisance. Onsite treatment systems should follow applicable County ordinances for human waste disposal requirements, consistent with the applicable tier under the State Water Resources Control Board Onsite Waste Treatment System Policy5.

Winterization Protocols for Statewide Cannabis Order
North Coast Region

Winterization must be completed by the onset of the winter period (**November 15** – April 1). Maintenance of all erosion protection and sediment capture measures is required year-round. Proactive 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.

Winterization Measures for ALL SITES:

- 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 (November 15).

- 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.

- 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.

- 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 at the frequency specified below.

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

- 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 inch/day or 1.0 inch/7 days of precipitation to determine if maintenance or cleaning is required.

- Cannabis cultivators shall stabilize all disturbed areas and construction entrances and exits to control erosion and sediment discharges from land disturbance.

- 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.

- 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.

- **All sites shall report winterization procedures implemented, any outstanding measures, and the schedule for completion, within the Facility Status section of their Annual Report, due every year on March 1st.**

Additional Monitoring for Moderate and High Risk Sites:

The following monitoring and reporting activities are required on a monthly basis, including during the winter period (November 15 – April 1):

Observations	Description
Surface Water Runoff	Report any conditions of surface water runoff, including location, duration, source of runoff (irrigation water, storm water, etc.)
Soil Erosion Control	Report any indications of soil erosion (e.g., gullying, turbid water discharge, landslide, etc.)
Sediment Capture	Report the status of sediment capture measures (e.g., silt fence, fiber rolls, settling basin, etc.)
Erosion/Sediment Capture Maintenance	Report maintenance activities to maintain the effectiveness of erosion control and sediment capture measures (e.g., reinstallation of straw mulch, hydroseeding, tarp placement, removal or stabilization of sediment captured, removal of settled sediment in a basin, etc.)
Stabilization of Disturbed Areas	Dischargers characterized as high risk (with any portion of the disturbed area within the setbacks), shall provide a status report describing activities performed to stabilize the disturbed area within the setback
Material(s) Storage Erosion/Spills Prevention	Report materials delivered or stored at the site that could degrade water quality if discharged off-site (e.g., potting soil, manure, chemical fertilizer, gasoline, herbicides, pesticides, etc.)
Holding Tank, Septic Tank, or Chemical Toilet Servicing	Septic Tank, or Chemical Toilet Servicing Report the dates, activity, and name of the servicing company for servicing holding tanks or chemical toilets

The following monitoring and reporting activities are required on a monthly basis for **ALL MONTHS** until winterization procedures are completed:

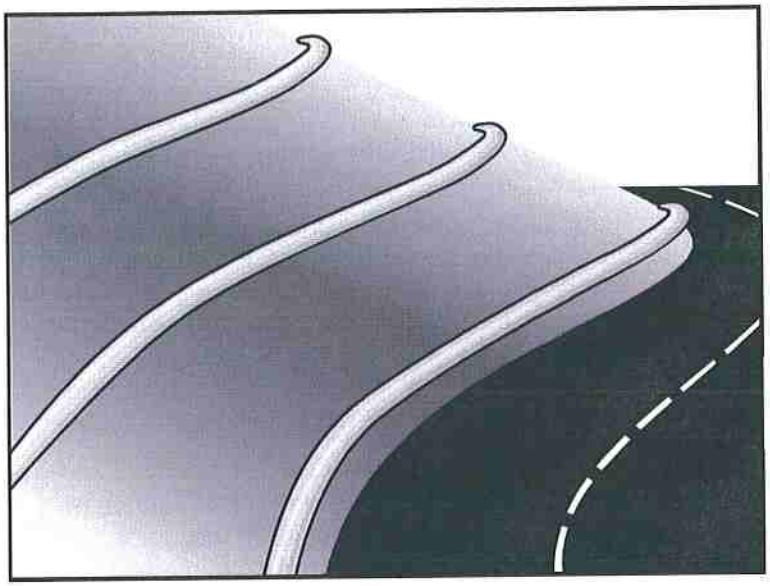
Constituent	Frequency
Turbidity	Once per calendar month when precipitation exceeds 0.25 in/day or when storm water runoff from the site is generated
pH	Once per calendar month when precipitation amount is forecast to exceed 0.25 in/day

See Attachment B of the Statewide Cannabis Order WQ 2017-0023-DWQ for details on sampling procedures

- **Although monitoring is required on a monthly basis, reporting of monthly observations shall be included in the Annual Report, due every year on March 1st.**
- Additional details on the components of the Site Management Plan involving winterization plans may be found in Attachment D of the Statewide Cannabis Order WQ 2017-0023-DWQ.

Fiber Rolls

SE-5



Categories

EC	Erosion Control	☒
SE	Sediment Control	☑
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence

SE-6 Gravel Bag Berm

SE-8 Sandbag Barrier

SE-14 Biofilter Bags

Description and Purpose

A fiber roll consists of straw, coir, or other biodegradable materials bound into a tight tubular roll wrapped by netting, which can be photodegradable or natural. Additionally, gravel core fiber rolls are available, which contain an imbedded ballast material such as gravel or sand for additional weight when staking the rolls are not feasible (such as use as inlet protection). When fiber rolls are placed at the toe and on the face of slopes along the contours, they intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide removal of sediment from the runoff (through sedimentation). By interrupting the length of a slope, fiber rolls can also reduce sheet and rill erosion until vegetation is established.

Suitable Applications

Fiber rolls may be suitable:

- Along the toe, top, face, and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.
- At the end of a downward slope where it transitions to a steeper slope.
- Along the perimeter of a project.
- As check dams in unlined ditches with minimal grade.
- Down-slope of exposed soil areas.
- At operational storm drains as a form of inlet protection.

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- Around temporary stockpiles.

Limitations

- Fiber rolls are not effective unless trenched in and staked.
- Not intended for use in high flow situations.
- Difficult to move once saturated.
- If not properly staked and trenched in, fiber rolls could be transported by high flows.
- Fiber rolls have a very limited sediment capture zone.
- Fiber rolls should not be used on slopes subject to creep, slumping, or landslide.
- Rolls typically function for 12-24 months depending upon local conditions.

Implementation

Fiber Roll Materials

- Fiber rolls should be prefabricated.
- Fiber rolls may come manufactured containing polyacrylamide (PAM), a flocculating agent within the roll. Fiber rolls impregnated with PAM provide additional sediment removal capabilities and should be used in areas with fine, clayey or silty soils to provide additional sediment removal capabilities. Monitoring may be required for these installations.
- Fiber rolls are made from weed free rice straw, flax, or a similar agricultural material bound into a tight tubular roll by netting.
- Typical fiber rolls vary in diameter from 9 in. to 20 in. Larger diameter rolls are available as well.

Installation

- Locate fiber rolls on level contours spaced as follows:
  - Slope inclination of 4:1 (H:V) or flatter: Fiber rolls should be placed at a maximum interval of 20 ft.
  - Slope inclination between 4:1 and 2:1 (H:V): Fiber Rolls should be placed at a maximum interval of 15 ft. (a closer spacing is more effective).
  - Slope inclination 2:1 (H:V) or greater: Fiber Rolls should be placed at a maximum interval of 10 ft. (a closer spacing is more effective).
- Prepare the slope before beginning installation.
- Dig small trenches across the slope on the contour. The trench depth should be ¼ to 1/3 of the thickness of the roll, and the width should equal the roll diameter, in order to provide area to backfill the trench.

- It is critical that rolls are installed perpendicular to water movement, and parallel to the slope contour.
- Start building trenches and installing rolls from the bottom of the slope and work up.
- It is recommended that pilot holes be driven through the fiber roll. Use a straight bar to drive holes through the roll and into the soil for the wooden stakes.
- Turn the ends of the fiber roll up slope to prevent runoff from going around the roll.
- Stake fiber rolls into the trench.
  - Drive stakes at the end of each fiber roll and spaced 4 ft maximum on center.
  - Use wood stakes with a nominal classification of 0.75 by 0.75 in. and minimum length of 24 in.
- If more than one fiber roll is placed in a row, the rolls should be overlapped, not abutted.
- See typical fiber roll installation details at the end of this fact sheet.

Removal

- Fiber rolls can be left in place or removed depending on the type of fiber roll and application (temporary vs. permanent installation). Typically, fiber rolls encased with plastic netting are used for a temporary application because the netting does not biodegrade. Fiber rolls used in a permanent application are typically encased with a biodegradeable material and are left in place. Removal of a fiber roll used in a permanent application can result in greater disturbance.
- Temporary installations should only be removed when up gradient areas are stabilized per General Permit requirements, and/or pollutant sources no longer present a hazard. But, they should also be removed before vegetation becomes too mature so that the removal process does not disturb more soil and vegetation than is necessary.

Costs

Material costs for regular fiber rolls range from $20 - $30 per 25 ft roll.

Material costs for PAM impregnated fiber rolls range between 7.00-$9.00 per linear foot, based upon vendor research.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Repair or replace split, torn, unraveling, or slumping fiber rolls.
- If the fiber roll is used as a sediment capture device, or as an erosion control device to maintain sheet flows, sediment that accumulates in the BMP should be periodically removed

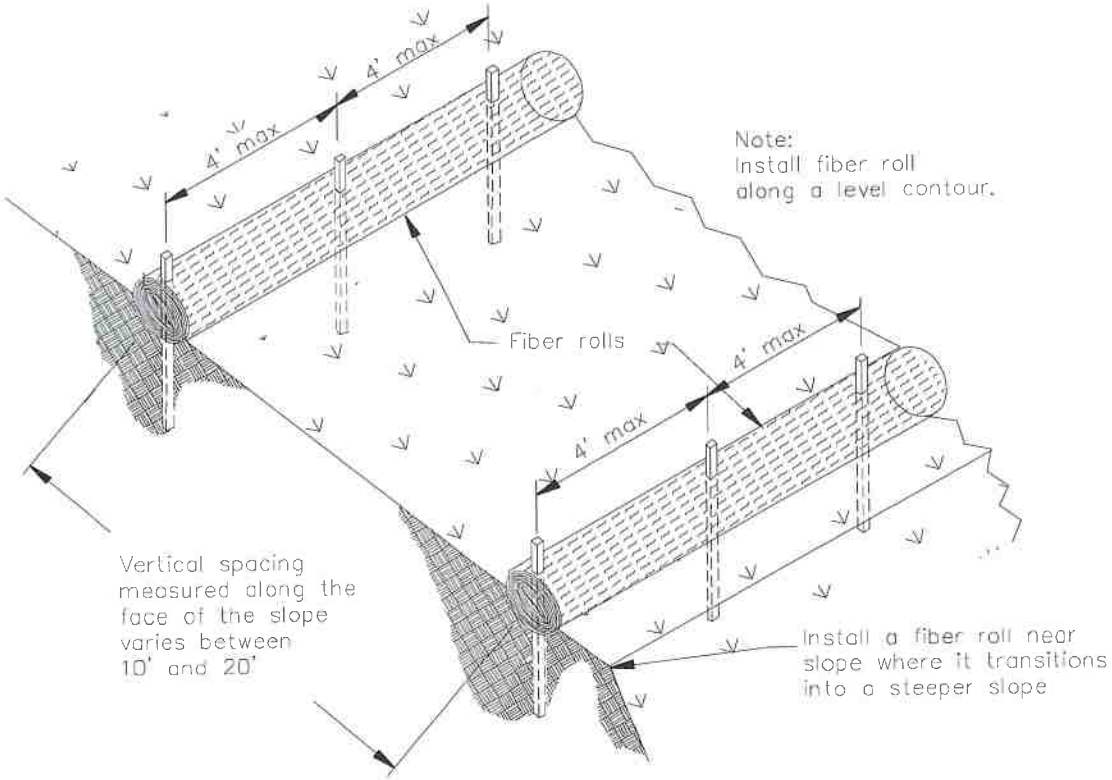
in order to maintain BMP effectiveness. Sediment should be removed when sediment accumulation reaches one-third the designated sediment storage depth.

- If fiber rolls are used for erosion control, such as in a check dam, sediment removal should not be required as long as the system continues to control the grade. Sediment control BMPs will likely be required in conjunction with this type of application.
- Repair any rills or gullies promptly.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.



TYPICAL FIBER ROLL INSTALLATION
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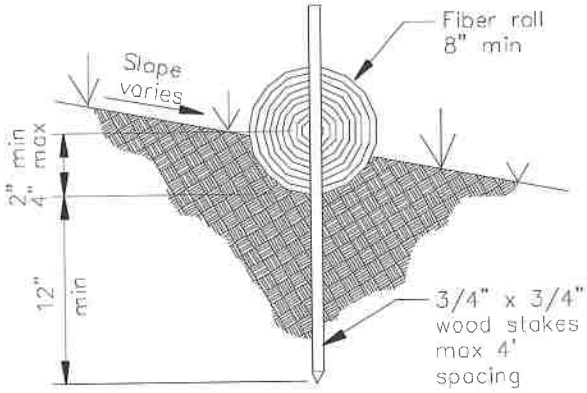

ENTRENCHMENT DETAIL
N.T.S.

PUBLICATION 8195

Vegetative Filter Strips for Nonpoint Source Pollution Control in Agriculture

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VEGETATIVE FILTER STRIPS: WHAT ARE THEY?

Orchards, vineyards, and row crops have the greatest erosion rates in irrigated agriculture, especially those that are managed with bare soil between tree or vine rows. The vegetative filter strip (VFS) offers one way to control erosion rates and keep soil in the field rather than letting it be carried off site in drainage water. A VFS is an area of vegetation that is planted intentionally to help remove sediment and other pollutants from runoff water (Dillaha et al., 1989).

Vegetative filter strips protect surface water bodies in a number of ways:

- They intercept surface water runoff and trap as much as 75 to 100 percent of the water's sediment.
- They capture nutrients in runoff, both through plant uptake and through adsorption to soil particles.
- They promote degradation and transformation of pollutants into less-toxic forms.
- They remove over 60 percent of certain pathogens from the runoff.

KEY DESIGN ELEMENTS FOR VEGETATIVE FILTER STRIPS

The United States Environmental Protection Agency (EPA) encourages growers to use engineered vegetative treatment systems such as VFSs at sites where these systems are likely to bring about a significant reduction in nonpoint source (NPS) pollution (US EPA, 2002). You can establish VFSs downslope from crop fields or animal production sites to control NPS pollutants that would otherwise escape with runoff. In orchards, you can use multiple VFSs installed perpendicular to the direction of surface water runoff to reduce soil erosion and even avoid expenses associated with herbicide application. The strips also have the potential to reduce the level of some pesticides in runoff by enhancing water infiltration and retention in the field. For example, contaminants such as phosphorus and certain pesticides such as pyrethroids that bind strongly to soil particles get trapped and retained in VFSs.

Key elements to consider when designing VFSs are discussed at the US EPA's Web site (http://www.epa.gov/OWOW/NPS/MMGI/Chapter7/index.html) under section II.C., "Management Measure for Vegetated Treatment Systems." These elements include

- **Slope.** Vegetative filter strips work best on slopes of less than 5 percent and are not recommended for slopes greater than 15 percent. They are ineffective on hilly plots or in terrain that allows concentrated water flow. If you see evidence of concentrated flow in the form of channels or rills you should use other erosion control strategies instead, such as establishing terraces, dykes, berms, or vegetative barriers.

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- **Site preparation.** The land where filter strips are to be planted should be roughened by disking and harrowing or by raking to prepare a good seedbed. After that you can seed the strips with a mixture of grasses and legumes to establish a stand.
- **Soil conditioning.** Before planting, apply any soil amendments that would ordinarily be used for crops grown on your land including fertilizer, lime, compost, or gypsum.
- **Width.** Strip width is an important variable influencing the effectiveness of VFSs because the period of contact between runoff water and vegetation in the filter strip increases as the strip's width increases (Tables 1 and 2). Generally speaking, the wider the filter strip, the better it will perform. One effective approach in sloping terrain is to plant grasses in bands about 6 feet (1.8 m) wide along hillside contours every 10 to 100 feet (3–30 m), depending on slope. The bands run crosswise on the hillside, perpendicular to the line of the slope. A single, dense VFS about 30 feet (9 m) wide is appropriate when you are protecting riparian areas, especially when an in-field system of strips is not possible. On flat terrain, 10- to 15-foot (3–4.5 m) wide filter strips at field boundaries and along irrigation ditches and roads are effective (Figure 1). One suggested design criterion is that the combined width of VFSs for a field should be at least as great as the width of the runoff-contributing area, though this may in fact be an impractical standard.
- **Vegetation.** Sturdy, tall perennial grasses do the best job of trapping sediment. Generally, hardy perennial native grass species that are capable of withstanding summer drought conditions are preferred, though it is important to consider local conditions and cultural practices. Short, flexible grasses are much less effective. Legumes are less effective than grasses at trapping sediment, but they work well when mixed with grasses because they boost nitrogen levels in the soil. Filter strips can also include other vegetation planted parallel to the grass strips, such as poplar, walnut, or shrubs. Note that soils that are subject to prolonged saturated conditions may require special wetland plant species. The USDA–NRCS "VegSpec" Web site (http://ironwood.itc.nrcs.usda.gov/Netdynamics/Vegspec/pages/HomeVegspec.htm) is an excellent Web-based support system that can help you select appropriate plant species for filter strips and other vegetative establishment practices.

Table 1. Minimum width for vegetative filter strips

Slope	Minimum width of buffer strip
1–3%	25 ft
4–7%	35 ft
8–10%	50 ft

Source: Standards and Specifications No. 393, USDA–NRCS Field Office Technical Guide, 2004.

Table 2. Examples of pollutant removal efficiency for vegetative filter strips

Filter type	Nutrient source	Plot length	Pollutant	Removal efficiency %	Reference
Bermudagrass buffer strip	cropland runoff	16 ft (4.8 m)	chlorpyrifos dicamba 2,4-D mecroprop	62–99 90–100 89–98 89–95	Cole et al., 1997
Bermudagrass-crabgrass mixture	cropland runoff	14–17 ft (4.3–5.3 m)	P (total) N (total)	26 50	Parsons et al., 1991
Bluegrass and fescue sod (9% slope)	cropland runoff	15 ft (4.6 m) 30 ft (9.1 m) 45 ft (13.7 m)	NH_4-N atrazine NH_4-N atrazine NH_4-N atrazine	92 93 100 100 97 98	Barfield et al., 1992
Corn-oat or orchardgrass mixture (4% slope)	feedlot	45 ft (13.7 m)	P (total) N (total)	88 87	Young et al., 1980
Fescue (10% slope)	dairy waste on silt loam soil	5 ft (1.5 m) 13 ft (4.0 m)	P dissolved NO_3 P dissolved NO_3	8 57 62 68	Doyle et al., 1977
Orchardgrass (5–16% slope)	simulated feedlot	15 ft (4.6 m) 30 ft (9.1 m)	P (total) N (total) P (total) N (total)	39 43 52 52	Dillaha et al., 1988
Orchardgrass (5–16% slope)	cropland runoff	15 ft (4.6 m) 30 ft (9.1 m)	P (total) N (total) P (total) N (total)	75 61 87 61	Dillaha et al., 1989
Ryegrass	cropland runoff	20, 40, & 60 ft (6, 12, & 18 m)	suspended solids atrazine isoproturon diflufenican NO_3 P (soluble)	87–100 44–100 99 97 47–100 22–89	Patty et al., 1997
Sorghum-Sudangrass mix (4% slope)	feedlot	45 ft (13.7 m)	P (total) N (total)	81 84	Young et al., 1980
Vegetated drainage ditch	simulated runoff	13 ft (4 m)	atrazine pyrethroid	98 100	Moore et al., 2001

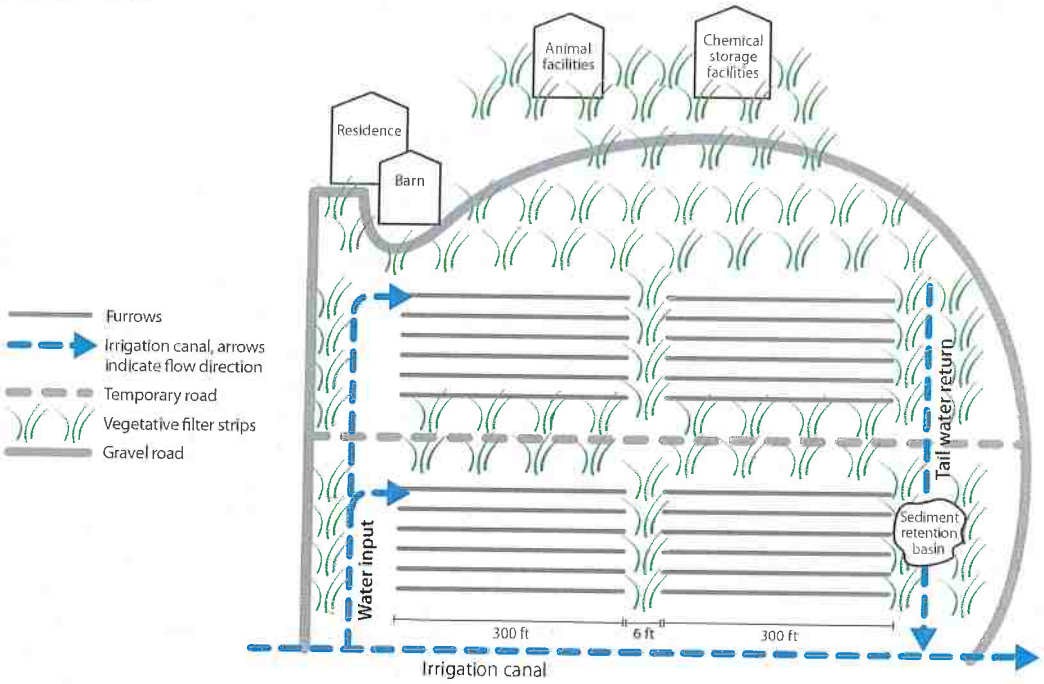

Figure 1. Farm plan indicating potential locations for vegetative filter strips.

- **Placement**. It is best to place the filter strips strategically so as to maximize the efficiency of contaminant removal. As a land manager, you have to identify where water flows on the property in order to identify the locations where VFSs will have the best chance of intercepting runoff. For instance, filter strips along stream banks are helpful since these areas can be subject to concentrated surface runoff from the surrounding landscape, but if you move the filter strips further up-slope within fields or orchards they can do their work before concentrated runoff occurs and that will yield better results. In irrigated row crop systems, wide filter strips along field boundaries would be most practical. A sample layout for VFS placement is illustrated in Figure 1. There are several critical placement areas: along roads, ditches, and animal confinement facilities, interspaced with the crop within the field, and at the field boundaries. Vegetated irrigation ditches can also be an effective strategy to trap pollutants.
- **Maintenance**. Vegetative filter strips require minimal maintenance, but you should consider the following operations:
  - Inspect the strips regularly for bare spots and other signs of erosion, especially after intense rain or runoff events.
  - Shallow, sheetlike flow of water must be maintained. If you find any evidence of channels and rills, repair it and reseed those areas.
  - Remove excess sediment buildup to keep water from diverting to a new, easier drainage route. If sediment accumulation is high (more than 6 inches deep), you will need to cultivate and reseed the affected areas.
  - Irrigate occasionally in summer if the vegetation that you plant requires it.
  - Mow the strips occasionally to a height of 4 to 10 inches to deter noxious weeds.
  - If pathogens such as bacteria are present in runoff water, mow the strips short to introduce sunlight and air that will desiccate the bacteria.
  - Noxious weeds must be controlled in and around the filter strips. You

may have to apply spot treatments of herbicide to control perennial noxious weeds.

- Limit traffic within filter strips.
- Occasionally harvest the filter strip vegetation and remove the cut biomass to prevent nutrient buildup.

- **Monitoring.** Some thought and effort should be given to monitoring the performance of the filter strips after installation. That way it will be possible for you to gauge your success and make later adaptations (such as redesign or replanting) to ensure regulatory compliance.

OBSERVED NONPOINT SOURCE POLLUTION CONTROL USING VEGETATIVE FILTER STRIPS

The effectiveness of VFSs for control of several NPS pollutants from cropland and feedlot runoff has been the subject of study, as has their effectiveness on sediment removal from surface mining and urban runoff (see Table 2). Based on empirical studies, trapping or removal efficiency frequently exceeded 90 percent of sediments, 50 to 80 percent of nutrients, and 44 to 100 percent of the herbicide atrazine. The ability of VFSs to trap pesticides varies depending on the nature of the compound and the design and maintenance of the filter strip. Vegetative filter strips are better at removing pesticides such as pyrethroids that bind to soil particles.

POLLUTANT-FILTERING MECHANISMS OF VEGETATIVE FILTER STRIPS

A vegetative filter strip functionally consists of three distinct layers—surface vegetation, root zone, and subsoil horizon—and as a result, the flow of water and pollutants through the filter strip can be a complex process. Once surface flow enters a VFS, infiltration is followed by saturation of the shallow subsurface. When the inflow rate exceeds the strip's infiltration capacity, overland flow occurs. In the root zone, some water infiltrates deeper into the subsoil while the remainder becomes lateral subsurface flow or *interflow* (Figure 2).

Runoff is less from hill slopes that have VFSs than from those that have none, a result of increased infiltration rates in the vegetated area. The vegetative strip's root zone allows high infiltration rates via macropores that arise with the generally

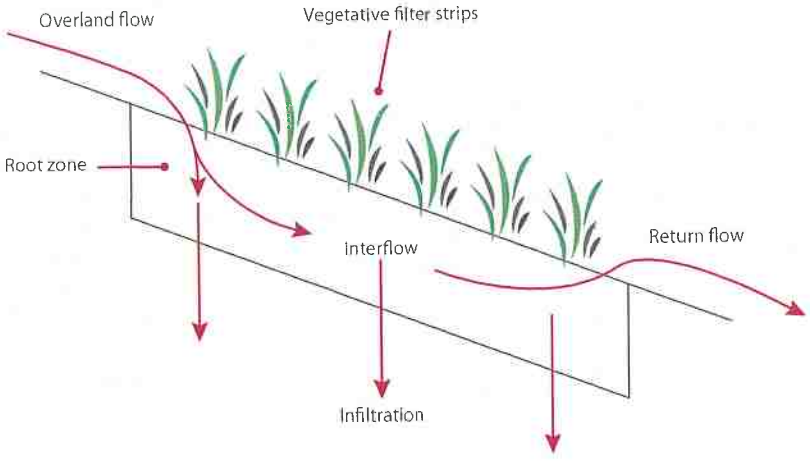

Figure 2. Cross-section of the patterns of water flow through hillside vegetative filter strips.

improved soil structure created by plant roots and other biological activities. The most important pollutant-trapping mechanism of VFSs is infiltration, followed by storage in the surface layer.

The soil constituent with the greatest influence on pesticide transport or pollutant retention and degradation is organic matter in the root zone and overlying surface litter layer. Greater biological activity in a soil improves its ability to effectively deal with pesticides and pollutants, and that kind of activity is more prevalent in a soil rich in plant roots, soil micro- and macro-fauna, and bacteria than in a soil without those organisms. Soil microorganisms play an essential role in the degradation of contaminants and soil organic matter is chemically reactive with the contaminants. For these reasons, you can expect degradation and adsorption of herbicides and pesticides to be greater in the filter strip's root zone than in adjacent fallow soils.

Vegetative filter strips on sloping land are subject to horizontal interflow within the root zone, in which case some pesticides may be filtered out, adsorbing onto soil organic matter. When the interflow water reappears on the surface as return flow it may have a lower pesticide concentration than the water that has flowed above ground. When infiltration is high in a VFS, the microbial- and plant-uptake processes cause denitrification, degradation of chemicals, and reduction of chemical concentrations in the surface layer between runoff events.

The effectiveness of VFSs depends on field conditions such as soil type, rainfall intensity, slope, micro-topography (surface soil roughness), the infiltration capacity of the vegetated area, the width of the strip, and the height of its plants. Slope and micro-topography affect overland flow velocity and uniformity and also appear to have an effect on the ability of VFSs to retain sediment and pollutants in runoff. Of course, the steeper the slope, the greater the sediment yield, all other factors being equal. Infiltration capacity and interflow within the VFSs influence the fate and path of dissolved nutrients and chemicals. The width of VFSs determines the strips' sediment-removing capacity and the amount of time the pollutant can be expected to remain in soil layers where adsorption and degradation processes are active.

You can find additional information at USDA–NRCS's "Buffer Strips Common Sense Conservation" Web site (http://www.nrcs.usda.gov/feature/buffers/). For more information on vegetative filter strips and incentive programs for land managers, contact your local UC Cooperative Extension office, Natural Resources Conservation Service office, Resource Conservation District, or Farm Service Agency office.

GLOSSARY

Absorption: the uptake of matter by a substance (such as a sponge) or living tissue (such as a plant).

Adsorption: a process whereby contaminants in water are drawn to and retained on the surfaces of soil solids by a chemical or physical binding mechanism.

Decomposition: a process whereby complex chemical compounds such as pesticides or organic materials are transformed into simpler compounds such as carbon dioxide gas.

Denitrification: the anaerobic conversion of nitrate-nitrogen into nitrogen gas by microbes.

Deposition: the retention of a transported material (such as waterborne chemicals) in a new, stationary position.

Infiltration: the entry of water into soil.

Interflow: water that moves through a filter strip as subsurface flow.

Volatilization: the transformation of a compound from liquid phase to gas phase.

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FOR MORE INFORMATION

You'll find related information in these titles and in other publications, slide sets, CD-ROMs, and videos from UC ANR:

The Farm Water Quality Plan, Publication 9002

Practices for Reducing Nonpoint Source Pollution from Irrigated Agriculture, Publication 8075

Developing a Nonpoint Source Pollution Evaluation Program, Publication 8087

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Filtering

Failure to inspect and maintain roads during wet weather use can lead to chronic turbidity if material is allowed to enter streams. Additional cross-drainage structures above stream crossings may eliminate stream turbidity. There may be instances when steep slopes below the road or a stream adjacent to a road fail to result in acceptable locations for a permanent filtering system. In these instances, temporary barriers may be the only available alternative.

On-site methods of control through seeding or armoring slopes with rock (as in Figure 6-21) and the use of geotextiles may prove successful, but it often is more effective to trap sediment using hay bales (Figure 6-22), settling ponds or sediment barriers. These barriers often are implemented after erosion becomes an issue, but when possible, should be installed before problems arise.

There may be times when environmentally sensitive areas cannot be adequately protected by using only hay bales. Fencing may be used in conjunction with ditching and hay bales to ensure proper filtering. Especially in the case of hay bales, occasional replacement may be necessary to maintain the effectiveness of the system.

Figure 6-21. Use of slope-armoring as a filtering system.

Figure 6-22. Use of hay bales as a filtering system.

Figure 6-23. Example of a road that has become a drainage channel.

If a road has become the drainage channel for water, as in Figure 6-23, measures must be taken to remove the water before extensive damage to the road occurs and/or it flows directly into a stream. If the road has no shape, waterbars will be necessary to move the water to the downside of the road before entering the stream. If the road does have a distinct geometric shape, the solution to adequate drainage may be simple as cutting through a roadside berm.

Cutting through berms to divert water off the road may be inadequate to sufficiently remove sediment before it enters a stream. Hay bales also can be placed along the berm to capture sediment created as a result of road-surface erosion (shown in Figure 6-24). Remember, stop-gap measures involving hay bales and sediment barriers are temporary solutions to the larger problem of direct-source erosion and sedimentation. The issue will persist until the root cause is identified and repaired.

Note: The preferred method of filtering is diverting road-surface drainage water onto stable, non-compacted and/or vegetated soil at least 50 to 100 feet from streams and stream crossings.

Figure 6-24. Use of hay bales for capturing sediment.

SOIL STABILIZATION

Figure 12-22: Once recommended as a wildlife planting, multiflora rose has become quite invasive in many locations.

Soil stabilization practices are used where soil is exposed, and natural revegetation is inadequate to prevent soil erosion (the detachment of soil) and subsequent sedimentation (the movement of soil). Soil can be exposed during road construction, by heavy volumes of traffic, and when closing out roads and skid trails. Some practices are designed to hold the soil in place and to prevent it from eroding, such as seeding and mulching, while other practices are intended to slow and capture sediment once it has begun to erode, such as straw bales and silt fences. There are a multitude of practices available to select from, depending on grade, slope length and location. These practices are often used in conjunction with one another to ensure water quality protection.

It is always more efficient and cost-effective to prevent erosion than to repair damage after the fact.

Timing is critical when implementing soil stabilization practices. Steps should be taken to stabilize any bare soils as soon as possible after it is disturbed. In the fall, seed may not germinate until the following spring, so soil stabilization practices in addition to seed and mulch may be needed to hold the soil in place during fall rains and spring snowmelt until the vegetation becomes established. During winter harvests, temporary soil stabilization may need to be installed before spring break-up to prevent erosion and then permanent practices installed after the site has become dry enough for equipment to work on.

Soil stabilization is a critical aspect of limiting the introduction and spread of non-native invasive plants. Disturbed soil acts as a germination bed if invasive plants exist in the area or if soil is brought that contains invasive plant propagules. Seed mixtures should include fast-growing species for quick soil protection, plus perennial species for longer soil protection until native vegetation returns to the site. Do not use mixtures that contain aggressive or non-native invasive plants like reed canary grass, birds-foot trefoil, crown/hairy vetch, or tall fescue; use certified weed-free seed (see 6.1, 6.2, and 6.5). See the tables at the end of this chapter and the resources in Chapter 5 and Appendix H of the *Forestry BMPs for Invasive Species: A Field Manual for Foresters, Landowners and Loggers* for lists of seeds that should and should not be used.

After the site has become stabilized by vegetation, temporary stabilization practices, like silt fences, can be removed. It may be necessary to seed and mulch in areas that are disturbed by the removal of the temporary structures.

BMPs: Soil Stabilization

- Use seed, mulch, and/or erosion control netting where necessary to minimize soil erosion into lakes, streams and wetlands.
- Install sediment control structures where necessary to slow the flow of runoff and to trap sediment until vegetation is established at the sediment source.
- Maintain, clean or replace sediment control structures until areas of exposed soil are stabilized.

Figure 12-23: A sediment trap to slow runoff and trap sediment for channelized flow. (Figure Credit: WDNR)

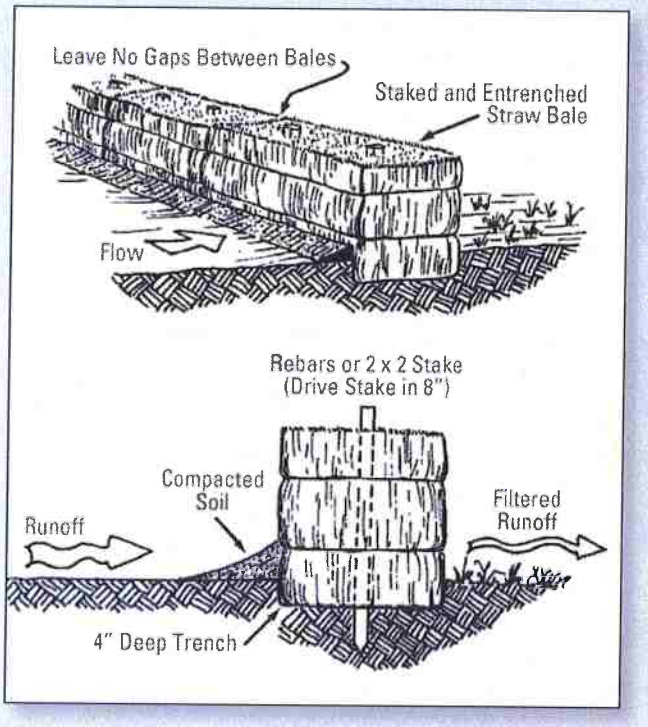


Figure 12-24: Straw bale fencing to slow runoff and trap sediment for sheet flow or channelized flow. (Figure Credit: WDNR)

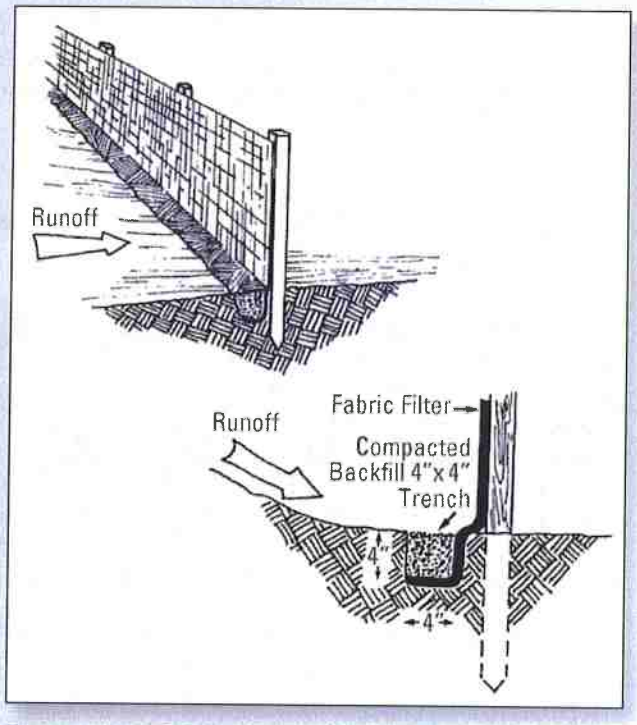


Figure 12-25: Silt fencing to slow runoff and trap sediment primarily for sheet flow, not channelized flow. (Figure Credit: WDNR)

Hoop House Anchor Row Protection

Description and Benefits

Hoop house Figure A: Filter fabric along roofline

Plastic hoophouses as used on the Central Coast provide valuable production benefits and a challenge for runoff management, especially on sloped lands. As conventionally configured, plastic covers can reduce the available permeable surface of a field's production area by over 90%, dramatically increasing the volume of water likely to run off a field in a storm event. Also, rainfall impact on the soil is concentrated along the roof edges of hoophouse anchor (or 'post") rows. Methods that have been used to address these challenges range from soil armoring and cover crops on anchor rows, weather-responsive placement of plastic covers, gutter and drain systems for diverting and directing 'roof' runoff, and increased spacings between hoophouse rows at intervals planted with grass or other vegetative cover. Filter fabric and cover crops in these rows provide the additional benefit of weed suppression.

When to use Hoop House Anchor Row Protection

Oleg Daugovishi, UCCE Ventura

Hoop house Figure B: Anchor-row barley cover crop

If a land manager anticipates a field set with hoophouses will experience rainfall while the plastic sheeting is up, anchor row protections will protect the soil from 'drip line' impacts, reducing maintenance and erosion risks along anchor rows. The degree to which these measures can be taken will depend on the land manager's resources, the acreage and density of hoophouses to be placed, the erosive potential of the field (soil texture and slope), the number of acres draining to individual collection points, and the manager's capacity to manage accumulated runoff through the field and at the field bottom (or low, collection point).

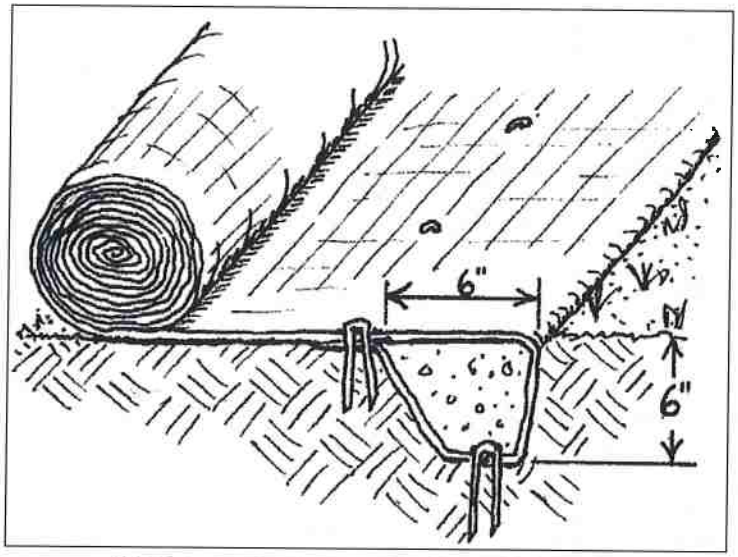
Implementation

There is very little guidance currently available regarding hoophouse runoff management in the United States. Hoophouse manufacturers and university extension guidance documents understandably focus almost exclusively on crop production factors. That said, for small, semi-permanent structures there are gutter systems available (Figure C., next page), although we have not observed them adapted for the predominant style of hoophouses in use for large-scale production on the Central Coast. Other novel approaches for using in-field drain-pipe to manage drainage of runoff collected along anchor rows are under investigation by growers but not yet verified in terms of effectiveness in a production context.

Hoop house Figure C: Gutter drains to tank

from erosion of collected runoff water as it spills into the field end ditch or road. See "Ditch Plastic and Grass for Road Protection" (page 27) and "Underground Outlets" (page 33) for treatments to protect roads and ditches carrying water off field. Where possible, drain anchor rows to lightly sloped, densely vegetated areas.

The California Storm-water BMP Handbook recommends covering the soil surface with geotextiles to reduce erosion from rainfall impact and hold soil in place. Woven and nonwoven materials with minimum tensile strength of 80 lbs can be used in anchor rows. The materials must be resistant to degradation by ultraviolet (UV) radiation (70% retained after 500 hours) and to biological and chemical environments normally found in soils. Geotextile mats should extend at least 2 feet under the anchor rows and cover the length of the hoophouse. The mat must be secured in place with wire staples and the ends and sides should be anchored in a 6 in. deep by 6 in. wide trench (Figure D). Backfill the trench and tamp the earth firmly to secure the mat.



Hoop house Figure D: Geotextile Anchor Trench

While USDA NRCS provides runoff management guidelines for the 'high tunnel' (hoophouse) practice, it is intended for application on less than 10% of a given farm's acreage. Those guidelines are incorporated into this section

When setting anchor rows, minimize vehicle traffic if possible in the anchor furrow to maintain maximum infiltration capacity.

Armoring can be made with a permeable material such as filter fabric, straw or fiber mulch or crushed rock (only for permanent installations). The outlet of each anchor row should be further armored to protect

Oleg Daugovishi, UCCE Ventura

UC Cooperative Extension researchers in Ventura County are still investigating the runoff and sediment attenuation benefits of grass cover crops planted along hoophouse post rows, but their preliminary results indicated a definitely observable benefit. Depending on the type of hoophouse or cover, any increase in the spacing between houses with the addition of vegetated cover will have a corresponding benefit in erosion and runoff reduction. Any such spacing should be made to accommodate mowing or weed trimming, depending upon the scale of the operation. In the example shown to the left,

Cover crop planted along hoopehouse post rows by Wayne Gularte

the hoophouse 'buffers' are also tied into a field drainage system. The inclusion of buffers or gaps between houses is dependent upon professional consultation, the limitations of hoophouse construction or form, the need relative to slope and soil type, and crop production needs. The Rational Method, as described earlier in this Manual, could potentially be very useful for gauging potential runoff rates of different arrangements of hoophouses for the sake of field planning relative to the site's capacity for handling that runoff.

Resources

Basler and Daugovish. 'UC introduces a new way to manage weeds in caneberry growing tunnels.' Ventura County Blog. 8/2/2013. http://ucanr.org/blogs/blogcore/postdetail.cfm?postnum=11040

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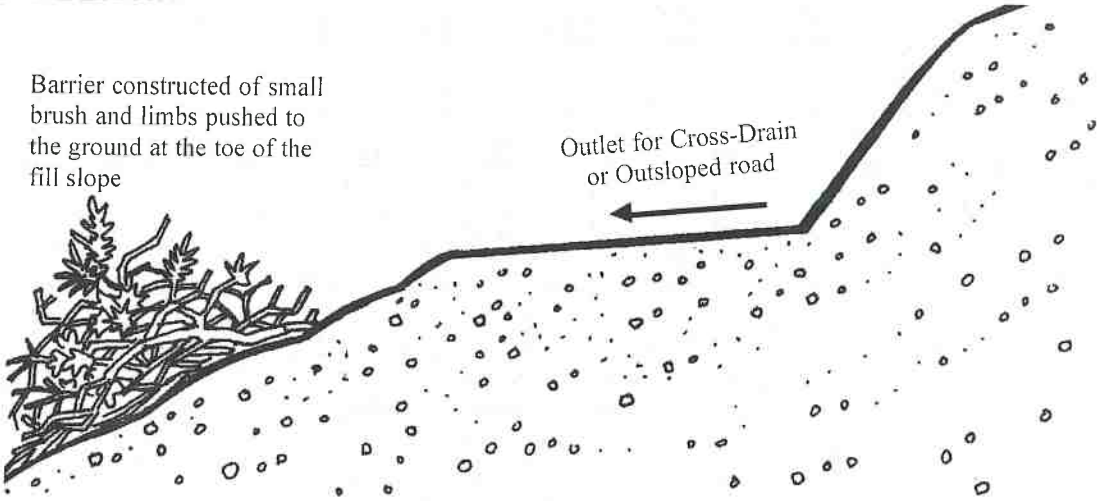
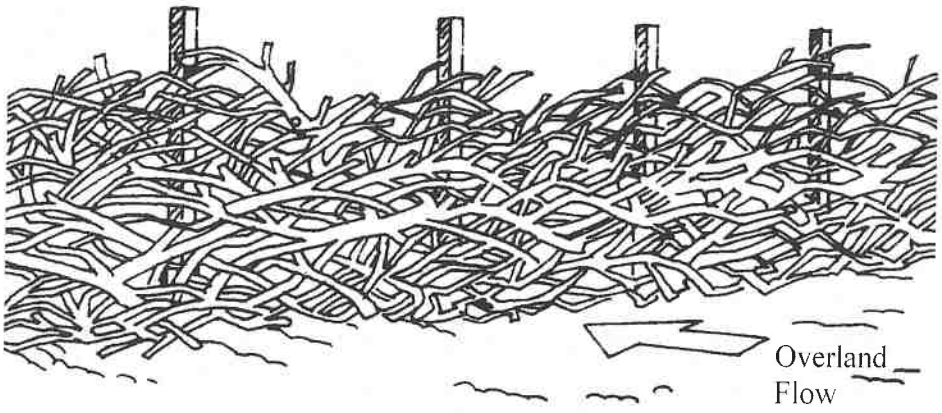
USDA-NRCS. 2011. *Field Office Technical Guide.* Conservation Practice Standard. Lined Waterway or Outlet. Code 468. Davis, CA.

Figure 13.2b Sediment control structures using brush barriers and brush fences.

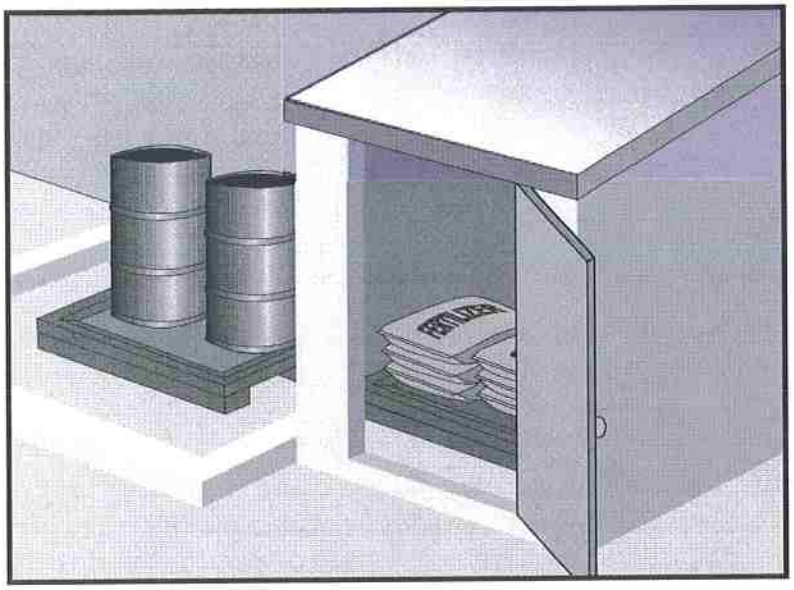
c. Brush Barrier





Brush Fence (buried 10 cm deep into soil).

Material Delivery and Storage WM-1



Categories		
EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents	
Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Prevent, reduce, or eliminate the discharge of pollutants from material delivery and storage to the stormwater system or watercourses by minimizing the storage of hazardous materials onsite, storing materials in watertight containers and/or a completely enclosed designated area, installing secondary containment, conducting regular inspections, and training employees and subcontractors.

This best management practice covers only material delivery and storage. For other information on materials, see WM-2, Material Use, or WM-4, Spill Prevention and Control. For information on wastes, see the waste management BMPs in this section.

Suitable Applications

These procedures are suitable for use at all construction sites with delivery and storage of the following materials:

- Soil stabilizers and binders
- Pesticides and herbicides
- Fertilizers
- Detergents
- Plaster
- Petroleum products such as fuel, oil, and grease

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- Asphalt and concrete components
- Hazardous chemicals such as acids, lime, glues, adhesives, paints, solvents, and curing compounds
- Concrete compounds
- Other materials that may be detrimental if released to the environment

Limitations

- Space limitation may preclude indoor storage.
- Storage sheds often must meet building and fire code requirements.

Implementation

The following steps should be taken to minimize risk:

- Chemicals must be stored in water tight containers with appropriate secondary containment or in a storage shed.
- When a material storage area is located on bare soil, the area should be lined and bermed.
- Use containment pallets or other practical and available solutions, such as storing materials within newly constructed buildings or garages, to meet material storage requirements.
- Stack erodible landscape material on pallets and cover when not in use.
- Contain all fertilizers and other landscape materials when not in use.
- Temporary storage areas should be located away from vehicular traffic.
- Material Safety Data Sheets (MSDS) should be available on-site for all materials stored that have the potential to effect water quality.
- Construction site areas should be designated for material delivery and storage.
- Material delivery and storage areas should be located away from waterways, if possible.
  - Avoid transport near drainage paths or waterways.
  - Surround with earth berms or other appropriate containment BMP. See EC-9, Earth Dikes and Drainage Swales.
  - Place in an area that will be paved.
- Storage of reactive, ignitable, or flammable liquids must comply with the fire codes of your area. Contact the local Fire Marshal to review site materials, quantities, and proposed storage area to determine specific requirements. See the Flammable and Combustible Liquid Code, NFPA30.
- An up to date inventory of materials delivered and stored onsite should be kept.

- Hazardous materials storage onsite should be minimized.
- Hazardous materials should be handled as infrequently as possible.
- Keep ample spill cleanup supplies appropriate for the materials being stored. Ensure that cleanup supplies are in a conspicuous, labeled area.
- Employees and subcontractors should be trained on the proper material delivery and storage practices.
- Employees trained in emergency spill cleanup procedures must be present when dangerous materials or liquid chemicals are unloaded.
- If significant residual materials remain on the ground after construction is complete, properly remove and dispose of materials and any contaminated soil. See WM-7, Contaminated Soil Management. If the area is to be paved, pave as soon as materials are removed to stabilize the soil.

Material Storage Areas and Practices

- Liquids, petroleum products, and substances listed in 40 CFR Parts 110, 117, or 302 should be stored in approved containers and drums and should not be overfilled. Containers and drums should be placed in temporary containment facilities for storage.
- A temporary containment facility should provide for a spill containment volume able to contain precipitation from a 25 year storm event, plus the greater of 10% of the aggregate volume of all containers or 100% of the capacity of the largest container within its boundary, whichever is greater.
- A temporary containment facility should be impervious to the materials stored therein for a minimum contact time of 72 hours.
- A temporary containment facility should be maintained free of accumulated rainwater and spills. In the event of spills or leaks, accumulated rainwater and spills should be collected and placed into drums. These liquids should be handled as a hazardous waste unless testing determines them to be non-hazardous. All collected liquids or non-hazardous liquids should be sent to an approved disposal site.
- Sufficient separation should be provided between stored containers to allow for spill cleanup and emergency response access.
- Incompatible materials, such as chlorine and ammonia, should not be stored in the same temporary containment facility.
- Materials should be covered prior to, and during rain events.
- Materials should be stored in their original containers and the original product labels should be maintained in place in a legible condition. Damaged or otherwise illegible labels should be replaced immediately.

- Bagged and boxed materials should be stored on pallets and should not be allowed to accumulate on the ground. To provide protection from wind and rain throughout the rainy season, bagged and boxed materials should be covered during non-working days and prior to and during rain events.
- Stockpiles should be protected in accordance with WM-3, Stockpile Management.
- Materials should be stored indoors within existing structures or completely enclosed storage sheds when available.
- Proper storage instructions should be posted at all times in an open and conspicuous location.
- An ample supply of appropriate spill clean up material should be kept near storage areas.
- Also see WM-6, Hazardous Waste Management, for storing of hazardous wastes.

Material Delivery Practices

- Keep an accurate, up-to-date inventory of material delivered and stored onsite.
- Arrange for employees trained in emergency spill cleanup procedures to be present when dangerous materials or liquid chemicals are unloaded.

Spill Cleanup

- Contain and clean up any spill immediately.
- Properly remove and dispose of any hazardous materials or contaminated soil if significant residual materials remain on the ground after construction is complete. See WM-7, Contaminated Soil Management.
- See WM-4, Spill Prevention and Control, for spills of chemicals and/or hazardous materials.
- If spills or leaks of materials occur that are not contained and could discharge to surface waters, non-visible sampling of site discharge may be required. Refer to the General Permit or to your project specific Construction Site Monitoring Plan to determine if and where sampling is required.

Cost

- The largest cost of implementation may be in the construction of a materials storage area that is covered and provides secondary containment.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Keep storage areas clean and well organized, including a current list of all materials onsite.
- Inspect labels on containers for legibility and accuracy.

- Repair or replace perimeter controls, containment structures, covers, and liners as needed to maintain proper function.

References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

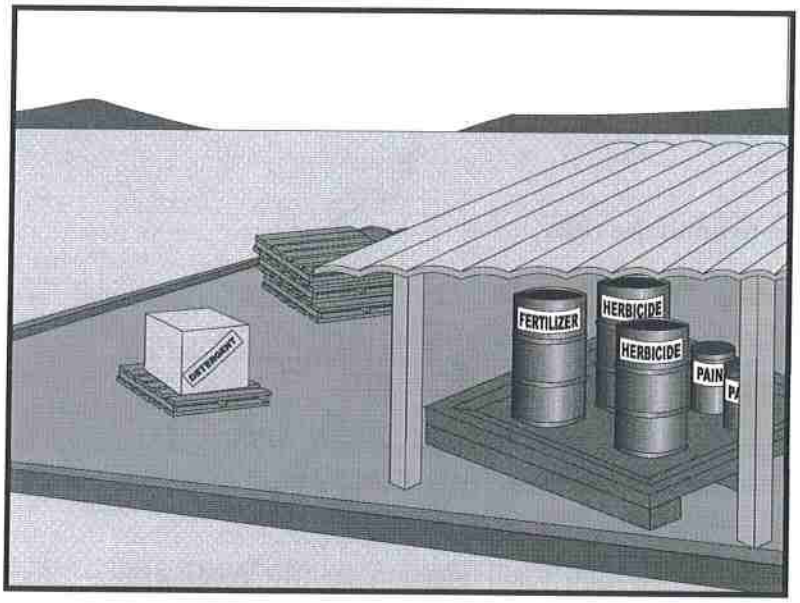
Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance, Working Group Working Paper; USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Material Use

WM-2



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Description and Purpose

Prevent or reduce the discharge of pollutants to the storm drain system or watercourses from material use by using alternative products, minimizing hazardous material use onsite, and training employees and subcontractors.

Suitable Applications

This BMP is suitable for use at all construction projects. These procedures apply when the following materials are used or prepared onsite:

- Pesticides and herbicides
- Fertilizers
- Detergents
- Petroleum products such as fuel, oil, and grease
- Asphalt and other concrete components
- Other hazardous chemicals such as acids, lime, glues, adhesives, paints, solvents, and curing compounds
- Other materials that may be detrimental if released to the environment

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

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Limitations

Safer alternative building and construction products may not be available or suitable in every instance.

Implementation

The following steps should be taken to minimize risk:

- Minimize use of hazardous materials onsite.
- Follow manufacturer instructions regarding uses, protective equipment, ventilation, flammability, and mixing of chemicals.
- Train personnel who use pesticides. The California Department of Pesticide Regulation and county agricultural commissioners license pesticide dealers, certify pesticide applicators, and conduct onsite inspections.
- The preferred method of termiticide application is soil injection near the existing or proposed structure foundation/slab; however, if not feasible, soil drench application of termiticides should follow EPA label guidelines and the following recommendations (most of which are applicable to most pesticide applications):
  - Do not treat soil that is water-saturated or frozen.
  - Application shall not commence within 24-hours of a predicted precipitation event with a 40% or greater probability. Weather tracking must be performed on a daily basis prior to termiticide application and during the period of termiticide application.
  - Do not allow treatment chemicals to runoff from the target area. Apply proper quantity to prevent excess runoff. Provide containment for and divert stormwater from application areas using berms or diversion ditches during application.
  - Dry season: Do not apply within 10 feet of storm drains. Do not apply within 25 feet of aquatic habitats (such as, but not limited to, lakes; reservoirs; rivers; permanent streams; marshes or ponds; estuaries; and commercial fish farm ponds).
  - Wet season: Do not apply within 50 feet of storm drains or aquatic habitats (such as, but not limited to, lakes; reservoirs; rivers; permanent streams; marshes or ponds; estuaries; and commercial fish farm ponds) unless a vegetative buffer is present (if so, refer to dry season requirements).
  - Do not make on-grade applications when sustained wind speeds are above 10 mph (at application site) at nozzle end height.
  - Cover treatment site prior to a rain event in order to prevent run-off of the pesticide into non-target areas. The treated area should be limited to a size that can be backfilled and/or covered by the end of the work shift. Backfilling or covering of the treated area shall be done by the end of the same work shift in which the application is made.
  - The applicator must either cover the soil him/herself or provide written notification of the above requirement to the contractor on site and to the person commissioning the

application (if different than the contractor). If notice is provided to the contractor or the person commissioning the application, then they are responsible under the Federal Insecticide Fungicide, and Rodenticide Act (FIFRA) to ensure that: 1) if the concrete slab cannot be poured over the treated soil within 24 hours of application, the treated soil is covered with a waterproof covering (such as polyethylene sheeting), and 2) the treated soil is covered if precipitation is predicted to occur before the concrete slab is scheduled to be poured.

- Do not over-apply fertilizers, herbicides, and pesticides. Prepare only the amount needed. Follow the recommended usage instructions. Over-application is expensive and environmentally harmful. Unless on steep slopes, till fertilizers into the soil rather than hydraulic application. Apply surface dressings in several smaller applications, as opposed to one large application, to allow time for infiltration and to avoid excess material being carried offsite by runoff. Do not apply these chemicals before predicted rainfall.
- Train employees and subcontractors in proper material use.
- Supply Material Safety Data Sheets (MSDS) for all materials.
- Dispose of latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths, when thoroughly dry and are no longer hazardous, with other construction debris.
- Do not remove the original product label; it contains important safety and disposal information. Use the entire product before disposing of the container.
- Mix paint indoors or in a containment area. Never clean paintbrushes or rinse paint containers into a street, gutter, storm drain, or watercourse. Dispose of any paint thinners, residue, and sludge(s) that cannot be recycled, as hazardous waste.
- For water-based paint, clean brushes to the extent practicable, and rinse to a drain leading to a sanitary sewer where permitted, or contain for proper disposal off site. For oil-based paints, clean brushes to the extent practicable, and filter and reuse thinners and solvents.
- Use recycled and less hazardous products when practical. Recycle residual paints, solvents, non-treated lumber, and other materials.
- Use materials only where and when needed to complete the construction activity. Use safer alternative materials as much as possible. Reduce or eliminate use of hazardous materials onsite when practical.
- Document the location, time, chemicals applied, and applicator's name and qualifications.
- Keep an ample supply of spill clean up material near use areas. Train employees in spill clean up procedures.
- Avoid exposing applied materials to rainfall and runoff unless sufficient time has been allowed for them to dry.
- Discontinue use of erodible landscape material within 2 days prior to a forecasted rain event and materials should be covered and/or bermed.

- Provide containment for material use areas such as masons' areas or paint mixing/preparation areas to prevent materials/pollutants from entering stormwater.

Costs

All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities.
- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Ensure employees and subcontractors throughout the job are using appropriate practices.

References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

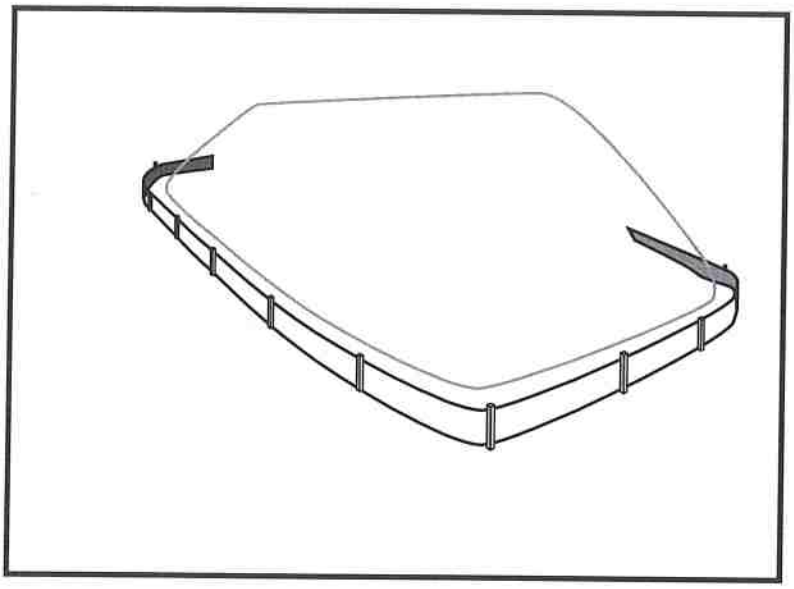
Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance, Working Group Working Paper; USEPA, April 1992.

Comments on Risk Assessments Risk Reduction Options for Cypermethrin: Docket No. OPP–2005–0293; California Stormwater Quality Association (CASQA) letter to USEPA, 2006.Environmental Hazard and General Labeling for Pyrethroid Non-Agricultural Outdoor Products, EPA-HQ-OPP-2008-0331-0021; USEPA, 2008.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Stockpile Management WM-3



Categories		
EC	Erosion Control	
SE	Sediment Control	☒
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Legend:
☑ **Primary Category**
☒ **Secondary Category**

Description and Purpose

Stockpile management procedures and practices are designed to reduce or eliminate air and stormwater pollution from stockpiles of soil, soil amendments, sand, paving materials such as portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate sub base or pre-mixed aggregate, asphalt minder (so called "cold mix" asphalt), and pressure treated wood.

Targeted Constituents	
Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Suitable Applications

Implement in all projects that stockpile soil and other loose materials.

Potential Alternatives

None

Limitations

- Plastic sheeting as a stockpile protection is temporary and hard to manage in windy conditions. Where plastic is used, consider use of plastic tarps with nylon reinforcement which may be more durable than standard sheeting.
- Plastic sheeting can increase runoff volume due to lack of infiltration and potentially cause perimeter control failure.
- Plastic sheeting breaks down faster in sunlight.
- The use of plastic materials should be avoided when feasible and photodegradable plastics should not be used.

Implementation

Protection of stockpiles is a year-round requirement. To properly manage stockpiles:

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- On larger sites, a minimum of 50 ft separation from concentrated flows of stormwater, drainage courses, and inlets is recommended.
- All stockpiles are required to be protected immediately if they are not scheduled to be used within 14 days.
- Protect all stockpiles from stormwater run-on using temporary perimeter sediment barriers such as compost berms (SE-13), temporary silt dikes (SE-12), fiber rolls (SE-5), silt fences (SE-1), sandbags (SE-8), gravel bags (SE-6), or biofilter bags (SE-14). Refer to the individual fact sheet for each of these controls for installation information.
- Implement wind erosion control practices as appropriate on all stockpiled material. For specific information, see WE-1, Wind Erosion Control.
- Manage stockpiles of contaminated soil in accordance with WM-7, Contaminated Soil Management.
- Place bagged materials on pallets and under cover.
- Ensure that stockpile coverings are installed securely to protect from wind and rain.
- Some plastic covers withstand weather and sunlight better than others. Select cover materials or methods based on anticipated duration of use.

Protection of Non-Active Stockpiles

Non-active stockpiles of the identified materials should be protected further as follows:

Soil stockpiles

- Cover and project soil stockpiles with soil stabilization measures and a temporary perimeter sediment barrier at all times.
- Consider temporary vegetation for topsoil piles that will be stockpiled for extended periods.

Stockpiles of Portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, or aggregate sub base

- Provide covers and protect these stockpiles with a temporary perimeter sediment barrier at all times.

Stockpiles of "cold mix"

- Cover cold mix stockpiles and place them on plastic sheeting (or comparable material) and surround the stockpiles with a berm all times.

Stockpiles of fly ash, stucco, hydrated lime

- Cover stockpiles of materials that may raise the pH of runoff (i.e., basic materials) with plastic and surround the stockpiles with a berm at all times.

Stockpiles/Storage of wood (Pressure treated with chromated copper arsenate or ammoniacal copper zinc arsenate)

- Cover treated wood with plastic sheeting (or comparable material) and surround with a berm at all times.

Protection of Active Stockpiles

Active stockpiles of the identified materials should be protected as follows:

- All stockpiles should be covered and protected with a temporary linear sediment barrier prior to the onset of precipitation.
- Stockpiles of "cold mix" and treated wood, and basic materials should be placed on and covered with plastic sheeting or comparable material and surrounded by a berm prior to the onset of precipitation.
- The downstream perimeter of an active stockpile should be protected with a linear sediment barrier or berm and runoff should be diverted around or away from the stockpile on the upstream perimeter.

Costs

For cost information associated with stockpile protection refer to the individual erosion or sediment control BMP fact sheet considered for implementation (For example, refer to SE-1 Silt Fence for installation of silt fence around the perimeter of a stockpile.)

Inspection and Maintenance

- Stockpiles must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- It may be necessary to inspect stockpiles covered with plastic sheeting more frequently during certain conditions (for example, high winds or extreme heat).
- Repair and/or replace perimeter controls and covers as needed to keep them functioning properly.
- Sediment shall be removed when it reaches one-third of the barrier height.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.