Site Management Plan
Technical Report
Order WQ 2019-0001-DWQ

For

APNs 315-291-001 & 315-082-007

Located at

Friday Ridge Road
Blue Lake, California

January 2021

Prepared for:
Brett Visser
WDID: 1_12CC417547
APNs: 315-291-001 & 315-082-007
Friday Ridge Road, Blue Lake, CA

Prepared by:
Hannah Hughes, Staff Scientist
Pacific Watershed Associates Inc.
P.O. Box 4433, Arcata, CA 95518
(707) 839-5130

PACIFIC WATERSHED ASSOCIATES

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I. INTRODUCTION AND PROJECT SUMMARY

Tier 1 and Tier 2 Dischargers enrolled in the State Water Resources Control Board (SWRCB) Cannabis Cultivation Policy Order WQ 2019-0001-DWQ, General Waste Discharge Requirements and Waiver of Waste Discharge Requirements for Discharges of Waste Associated with Cannabis Cultivation Activities (General Order) shall submit and implement a Site Management Plan (Plan) that describes how the Discharger is implementing the Best Practicable Treatment or Control (BPTC) measures listed in Attachment A of the State Water Resource Control Board's Cannabis Cultivation Policy (approved April 16, 2019). The Plan includes a schedule to achieve compliance, and all work must be completed by the onset of winter period each year. (The due date does not relieve a Discharger from implementing the interim soil stabilization BPTC measures described in Attachment A.)

This report documents Pacific Watershed Associate's (PWA) Site Management Plan (Plan) for Humboldt County APNs 315-291-001 and 315-082-007, located off of USFS Route 4N32, Humboldt County, California, as shown on Figure 1. This property is located approximately 20.7 miles southeast of Blue Lake, Humboldt County, CA, and hereinafter is referred to as the "Project Site."

The Project Site cultivator ("Discharger") has transferred enrollment in the North Coast Regional Water Quality Control Board Order R1-2015-0023 to the State Water Resources Control Board (SWRCB) Cannabis Cultivation Policy Order WQ 2019-0001-DWQ, General Waste Discharge Requirements and Waiver of Waste Discharge Requirements for Discharges of Waste Associated with Cannabis Cultivation Activities (General Order). A Water Resource Protection Plan (WRPP) was prepared and delivered to the Discharger by PWA based on site inspections conducted on June 15, August 3, and September 28, 2017, and is included as a supplemental attachment to this document (Appendix A). Several remedial measures recommended in the WRPP to comply with the Standard Conditions of the Regional Water Quality Control Board's Order have already been implemented by the landowner.

Based on the total disturbance area, slopes of disturbed areas, and riparian setbacks, this property falls within **Tier 2 Low Risk** of the General Order. Properties that fall into Tier 1 or 2 of the General Order are required to develop a Site Management Plan (Plan). This Plan has been developed for the Discharger based on site inspections made by PWA on the Project Site and references the remedial actions identified in the existing WRPP pertaining to the Project Site. PWA's recommendations for any remediation or corrective actions are a result of water quality requirements under the General Order, including Best Practicable Treatment or Control (BPTCs) designed to meet those requirements. This Plan documents the findings of subsequent site visit(s) and inspection(s) conducted on October 17, 2019, and November 11, 2020 by PWA Geologist Kathy Moley and staff Geologists Michelle Robinson and Hector Flores, when a reconnaissance level investigation of the property was conducted and the conditions noted.

II. CERTIFICATIONS, LIMITATIONS AND CONDITIONS

This Plan has been reviewed by a California licensed professional geologist at PWA and all information herein, including treatment recommendations, are based on observations, data, and information collected by PWA staff.

This Plan has been prepared to: 1) provide specific BPTC measures to be utilized on the Project Site to minimize current or potential threats to water quality, 2) provide itemized remedial actions to be taken on the Project Site to correct existing or potential water quality threats or impacts and meet the general waste discharge requirements of the General Order, 3) provide a revised schedule for the implementation of the itemized remedial actions, and 4) provide implementation schedules for all Winterization and BPTC measures. The analysis and recommendations submitted in this Plan and attached WRPP are based on PWA's evaluation of the Project Site and activities which fall under the General Order.

In this Plan and attached WRPP, PWA describes the recent and current conditions of the Project Site and any water resource and water quality risk factors PWA observed during site inspections. PWA is not responsible for problems or issues we did not observe on our site inspections, or for changes that have naturally occurred or been made to the property after our site review. The interpretations and conclusions presented in this Plan are based on reconnaissance level site investigations of inherently limited scope. Observations are qualitative, or semi-quantitative, and confined to surface expressions of limited extent and artificial exposures of subsurface materials. Interpretations of problematic geologic, geomorphic, or hydrologic features such as unstable hillslopes, erosional processes, and water quality threats are based on the information available at the time of our inspection and on the nature and distribution of existing features we observed on the property.

A schedule of itemized remedial actions that are based on these observations is included with this Plan. The remedial actions provided in this Plan have been developed from professional opinions derived in accordance with current standards of professional practice and are valid as of the date of the most recent or most applicable field inspection. No other warranty, expressed or implied, is made. Furthermore, to ensure proper applicability to existing conditions, the information and remedial actions contained in this report shall be regularly reevaluated and it is the responsibility of the landowner and/or lessee operating under the General Order to ensure that no remedial actions or recommendations are inappropriately applied to conditions on the property that have changed since the recommendations were developed.

If site conditions have changed for any reason, the Project Site should be reevaluated, and the Plan and associated recommendations revised and updated as required. These conditions include any changes in land management activities or property conditions that have occurred since our site visit (regardless of what they are, how they occurred, or who performed them). Similarly, if the landowner/lessee uses portions of this property not identified or covered under the current Plan, this Plan will need to be updated with the new information, including possible additions or changes to the recommended remedial or corrective actions and BPTCs.

The person, persons, business or other entity listed as the enrollee under the General Order is responsible for complying with all the requirements thereunder, including the WRPP and related recommendations and requirements, regardless of who is operating or cultivating on that Project

Site. If the enrollee is not the sole landowner and fails to comply with the Order and its requirements, the landowner or remaining landowners will automatically assume responsibility for the requirements therein, including all related penalties or actions brought by the SWRCB and/or NCRWQCB.

If at any time in the future the property is to transfer ownership, it is the responsibility of the current owner(s), or their representative(s), to ensure that the information and recommendations contained herein are called to the attention of any future owner or agent for the property. Unless this Plan is modified by the SWRCB or NCRWQCB, the findings and recommendations contained in this Plan shall be utilized as a tool while implementing the Plan remedial actions. Necessary steps shall be taken to see that contractor(s) and subcontractor(s) carry out such recommendations in the field in accordance with the most current Plan and BPTC standards.

PWA will be responsible for the data, interpretations and recommendations developed by PWA, but will not be responsible for the interpretation by others of that information, for implementation of corrective actions by others, or for additional or modified work arising out of those plans, interpretations, and recommendations. PWA assumes no liability for the performance of other workers or suppliers while following PWA's recommendations in the Plan, unless PWA is under contract to perform or oversee those activities. Additionally, PWA is not responsible for changes in applicable or appropriate standards beyond our control, such as those arising from changes in legislation or regulations, or the broadening of knowledge which may invalidate or alter any of our findings or recommended actions.

Any Plan review or construction management services that may be needed or identified in the recommendations sections of this Plan are separate tasks from the preparation of this Plan and are not a part of the contract under which this Plan was prepared. If requested, additional PWA field inspections, surveys, Plan revisions/updates, project layout, design, permitting, construction oversight/management, or other related services arising from tasks described and recommended in the Plan may be performed under separate agreements requiring advance notice and contracting.

PWA's services consist of professional opinions and recommendations made in accordance with generally accepted principles and practices. No warranty, expressed or implied, or merchantability or fitness, is made or intended in connection with our work, by the proposal for consulting or other services, or by the furnishing of oral or written reports or findings. This Plan, as written or as modified in writing, takes precedence over all other communication. If the client desires assurances against project failures, they shall obtain appropriate insurance through their own insurance broker or guarantor.

Prepared by:

Hannah Hughes

Hannah Hughes, Staff Scientist
Pacific Watershed Associates, Inc.
P.O. Box 4433, Arcata, California 95518

Figure 1. Site Management Plan Location Map for APNs 315-291-001 and 315-082-007, located on Friday Ridge Road, Blue Lake, California.

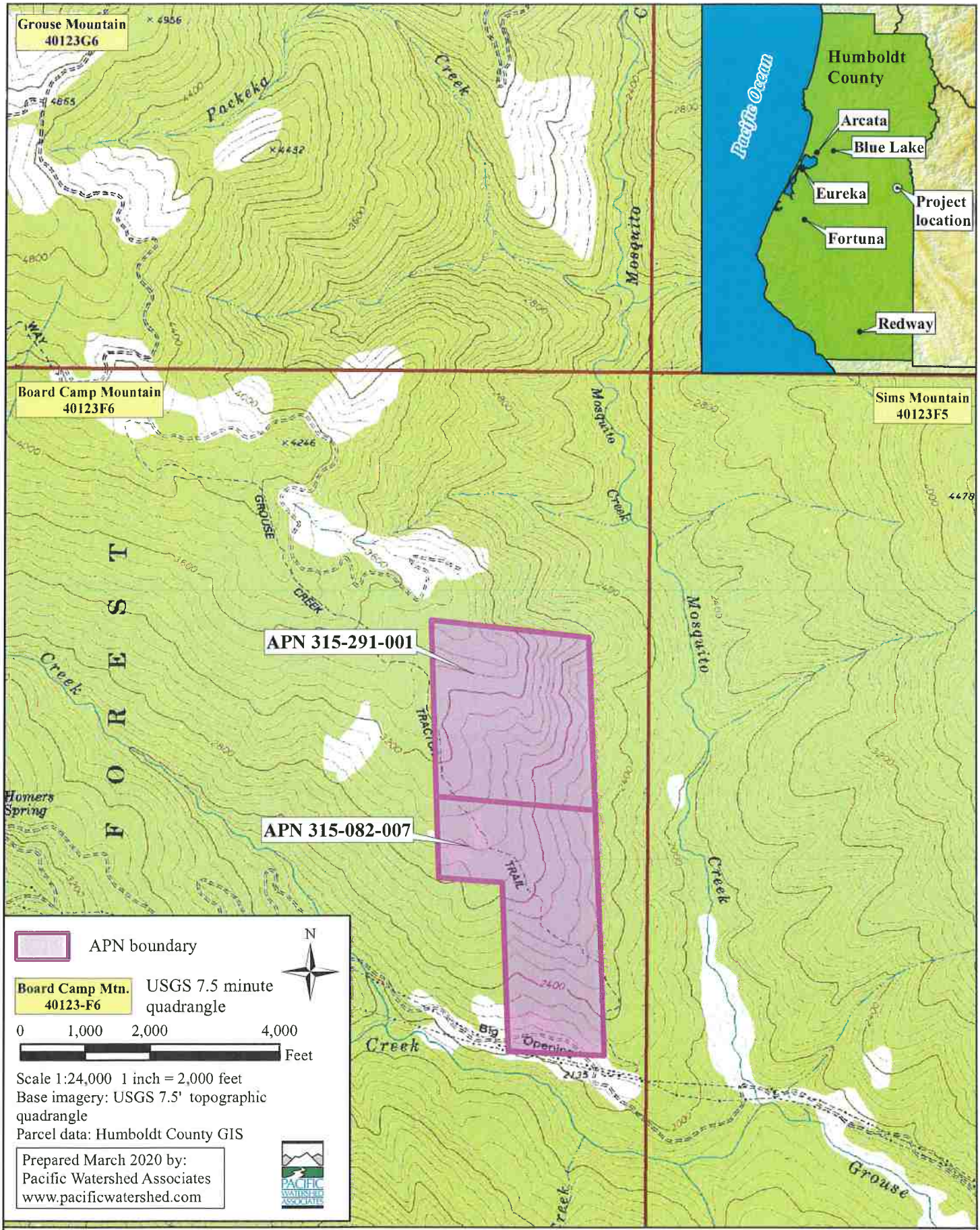

Figure 1. Site Management Plan Location Map M, APN 315-291-001 and 315-082-007, located out Friday Ridge Road, Blue Lake, California.

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III. SITE MANAGEMENT PLAN – ORDER WQ 2019-0001-DWQ REQUIREMENTS

1.0 SEDIMENT DISCHARGE BPTC MEASURES

1.1 Site Characteristics

1.1.1 Site Map

See the attached site map, Figure 2, showing access roads, vehicle parking areas, streams, stream crossings, cultivation site(s), disturbed areas, buildings, and other relevant site features as applicable:

- for Region 1 dischargers: legacy waste discharge issues that exist on the property
- erosion prevention BPTC measures
- sediment control BPTC measures
- winterization (W) measures
- storage locations for: fertilizers and amendments
- petroleum product storage locations
- trash/refuse storage locations
- onsite wastewater treatment system(s), including any domestic wastewater treatment, storage, or disposal area(s)

1.1.2 Access, Maintenance, and Storm Water

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.).

Approximately two miles of road were inspected on the Project Site (Figures 2A and 2B). Currently, maintained roads are used primarily for travel and access to Project Site infrastructure. All inspected roads lack sufficient drainage to disperse flow and minimize hydrologic connectivity. There are three existing ditch relief culverts (DRC), of which two are located between Stream Crossings (SC) #1 and SC #2, do not exhibit erosion at the outlets, and have vegetated ditches (Figure 2A). The third DRC, located at the intersection with the access road leading to Cultivation Area (CA) #2, receives abundant ditch flow as indicated by the incised ditch. The ditch incision appears to be caused by the insloped road configuration and a long length of hydrologically connected road. No significant amount of erosion was observed at the outlet of DRC #3 (Figure 2A). PWA recommends the installation of rolling dips at locations identified on Figures 2A and 2B in order to hydrologically disconnect roads and ultimately reduce future road surface erosion and sediment delivery to adjacent and nearby streams.

1.1.3 Stream Crossings

Describe any vehicle stream crossing including the type of crossing (e.g., bridge, culvert, low water, etc.).

Three stream crossings were identified on the Project Site and include:

SC #1 is a properly installed 18-inch diameter corrugated metal culvert. The stream channel below the culvert outlet is armored with approximately 10 yd^3 of rock armor to prevent erosion. The culvert is properly sized for the expected 100-year peak stream flow and associated debris. There is a low potential for stream crossing failure and future erosion poses a minimum threat to water quality.

Treatment - PWA does not recommend upgrading the crossing given its adequate size and placement. Routine maintenance will be conducted to uphold the stream crossing's integrity.

SC #2 is a 12-inch diameter plastic culvert within a Class III watercourse. The culvert is set askew to the stream channel alignment and is 90% plugged at the outlet from recent road grading activity. The culvert is not properly sized to withstand 100-year stream flow and associated debris.

Treatment - Upgrade this culvert with a 30-inch diameter by 30-foot long corrugated plastic or metal pipe sized for the expected 100-year peak stream flow and associated debris, and installed at the base of the fill and at the natural channel grade (see LSAA 1600-2019-0253-R1).

SC #3 is an undersized 18-inch corrugated metal pipe. The culvert is set slightly askew to the natural stream channel alignment and is not properly sized to withstand 100-year stream flow and associated debris.

Treatment - Upgrade this culvert with a 24-inch diameter by 30-foot long corrugated plastic or metal pipe sized for the expected 100-year peak stream flow and associated debris, and installed at the base of the fill and at the natural channel grade. (see LSAA 1600-2019-0253-R1)

1.1.4 Other Sediment Discharge Issues

A spring located on Road #4 leading to CA #3 was observed to saturate the roadbed during wet weather periods. PWA recommends installing an armored rolling dip to drain and disperse the spring flow across the road; and thereby, reduce the potential for additional road surface erosion (Figure 2A).

Past grading practices conducted at the northern end of the graded pad containing the Nursery Building and several storage sheds resulted in the placement of unstable material within the riparian area above a Class III stream (see Inset Map on Figure 2A). To mitigate the perched spoil material, unstable fill is proposed to be removed from the Streamside Management Area will be removed, and any spoils generated during construction will be stored in a stable location and mulched to prevent surface erosion (see LSAA 1600-2019-0253-R1). In general, graded pads are lacking necessary shaping to disperse runoff and need to be rocked to mitigate potential rutting.

1.1.5 Legacy Waste Discharge Issues for Region 1

For Region 1 Dischargers, identify, discuss, and locate on the site map any legacy waste discharge issues that exist on the property.

The project parcel is partially covered with second growth forests that likely conceal abandoned, legacy forest roads used in past logging activities. Some legacy roads found beneath the forest canopy may or may not pose a threat to water quality. No legacy roads or skids were identified near stream channels, unstable fillslopes, steep hillslopes or within riparian zones during any of PWA site inspections. The second growth forested areas should be inspected more thoroughly for the presence of legacy roads. If existing potential legacy roads have site locations with the potential for sediment delivery, they will need to be treated using erosion prevention and erosion control treatments according to standards provided in the "Handbook for Forest, Ranch and Rural Roads," (Weaver, Weppner and Hagans, 2015), and the California Salmonid Stream Habitat Manual, Part X (Weaver, Hagans and Weppner, 2006).

1.2 Sediment Erosion Prevention and Sediment Capture

Moderate risk Tier 1 or Tier 2 Dischargers are required to submit a Site Erosion and Sediment Control Plan. Those Dischargers may refer to that plan rather than repeat it here.

The Project Site is designated as a **Tier 2 Low Risk** Discharger and is not required to submit a Site Erosion and Sediment Control Plan.

1.2.1 Erosion Prevention and Sediment Control Measures: BPTCs, Schedule, and Map

The description shall address physical BPTC measures, (e.g., placement of straw mulch, plastic covers, slope stabilization, soil binders, culvert outfall armoring, placement of /silt fences, fiber rolls, or settling ponds/areas, etc.) and biological BPTC measures (vegetation preservation/replacement, vegetated outfalls, hydro seeding, etc.).

Refer to **Error! Reference source not found.**~~Table 1~~, below, for a description of erosion prevention and sediment capture BPTC measures that have been or will be implemented to prevent or limit erosion and capture sediment that has been eroded. The table also includes an implementation schedule for BPTC measures that have not yet been implemented. Refer to Figure 2A and 2B for the locations of erosion prevention and sediment control BPTC measures.

Specific erosion prevention and sediment control measures intended to prevent or limit erosion and capture sediment that has been eroded shall be implemented prior to the onset of each wet weather season, including the placement of straw mulch on bare soil areas as needed, planting of cover crops at cultivation areas, preservation/replacement of existing vegetative cover, indoor storage of bulk potting soil, slope stabilization, and culvert outfall and fillslope armoring. These

measures will be implemented as needed prior to the wet weather season at cultivation areas, stream crossings, road segments, and any additional areas on the Project Site with the potential to threaten water quality.

1.2.2 Maintenance Activities – Erosion Prevention and Sediment Control

1.2.2.1 Monitoring and Maintenance

Describe how the erosion prevention and sediment control BPTC measures will be monitored and maintained to protect water quality.

In general, the Project Site needs to be monitored throughout the year to identify any problems that might arise and to monitor the effectiveness of corrective actions when completed. Refer to Table 1 for recommendations relating to existing and proposed BPTC measures that will require monitoring and/or maintenance.

The goal of the monitoring is to ensure the original problem/feature has been effectively treated and that the causal mechanisms (ineffective road drainage, improperly designed stream crossings, etc.) are not continuing to threaten or cause water quality degradation. If additional deficiencies develop, or individual problems arise, then corrective actions must be implemented immediately.

Periodic inspections should include visual inspection of the site, including any management measures/practices, to ensure they are being implemented correctly and are functioning as expected. Inspections include photographic documentation of any controllable sediment discharge sites, as identified on the site map, and a visual inspection of those locations on the site where pollutants or wastes, if uncontained, could be transported into receiving waters, and those locations where runoff from roads or developed areas drains into or towards surface water.

At a minimum, sites shall be inspected at the following times to ensure timely identification of changed site conditions and to determine whether implementation of additional management measures is necessary to prevent or minimize discharges of waste or pollutants to surface water.

1) Before and after any significant alteration or upgrade to a given stream crossing, road segment, or other controllable sediment discharge site. Inspection should include photographic documentation, if possible.
2) Prior to November 15 to evaluate site preparedness for storm events and stormwater runoff.
3) Following the accumulation of 3-inches cumulative precipitation (starting September 1st) or by December 15th, whichever is earlier.

4) Following storm events that produce 0.5 inches in 24 hours or 1-inch within seven consecutive days of precipitation (Cannabis Cultivation Policy: Attachment A). Precipitation data can be obtained from the National Weather Service by entering the site zip code at http://www.srh.noaa.gov/forecast; pick the nearest or most relevant zip code and then select the 3-day history that will also show precipitation totals.

1.2.2.2 Captured Sediment

Describe how any captured sediment will be either stabilized in place, excavated and stabilized on-site, or removed from the site.

In the event that any excess sediment is generated, all captured sediment will be stabilized and stored in a stable location onsite with no threat of delivery to surface waters. All applicable BPTC measures will be implemented to prevent sediment mobilization and revegetation.

1.2.3 Erosion Control BPTC Measures – Interim and Long-term

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.

Please refer to Table 1, below, for more information regarding interim and long-term erosion control BPTC measures and implementation schedules.

Table 1. Prioritized implementation schedule for Best Practicable Treatment or Controls (BPTC).

Schedule	Map Point or Location	Summary of Corrective Actions/Recommendations (see more detailed listing of corrective actions in Appendix A - WRPP)
CA – Cultivation Area CA – Cultivation Waste DA – Disturbed Area DRC – Ditch Relief Culvert OWTS – Onsite Wastewater Treatment System SC – Stream Crossing SM – Straw Mulch SW – Straw Wattle RD – Rolling Dip W – Winterization <E> – Existing <P> – Proposed		
Cultivation Areas		
Annually by Nov. 15th and after large storm events (>0.5 in in 24 hr)	<P> BPTC/W; CA #1-#4	1) Winter cover crops will be planted in cultivation areas (raised beds, geo pots, etc.) or tarped before winter season to prevent nutrient leaching. 2) All bare soil areas will be seeded and mulched with 1) barley or wheat-based erosion control seed that does not contain Annual or Perennial Ryegrass and 2) weed-free straw until areas are revegetated. 3) All erosion control measures will be monitored during and after each storm even that produces at least 0.5 in/day or 1.0 in/week of precipitation and repaired or replaced as needed. 4) All winterization measures should be conducted before the winter snows set in.

Schedule	Map Point or Location	Summary of Corrective Actions/Recommendations (see more detailed listing of corrective actions in Appendix A - WRPP)
CA – Cultivation Area CA – Cultivation Waste DA – Disturbed Area DRC – Ditch Relief Culvert OWTS – Onsite Wastewater Treatment System SC – Stream Crossing SM – Straw Mulch SW – Straw Wattle RD – Rolling Dip W – Winterization <E> – Existing <P> – Proposed		
	Stream Crossings	
Annually by Nov. 15th and ongoing	<E> BPTC/W; SC #1 <P> BPTC/W SC #2; SC #3	1) Monitor and maintain all culvert inlets/outlets, especially prior to the onset of the wet weather season, and during and after large rainfall events when access allows (>0.5 inches in 24 hours).
10/15/2021	<P> BPTC/W; SC #2 – 3	1) SC #2 and SC #3 will be upgraded according to the LSAA Notification No. 1600-2019-0253-R1, as per the SMA Special Permit, the 401 Certification and to standards provided in the "Handbook for Forest, Ranch and Rural Roads," (Weaver, Weppner and Hagans, 2015), and the California Salmonid Stream Habitat Manual, Part X (Weaver, Hagans and Weppner, 2006).
	Roads	
By 10/15/2021	<P> BPTC; RD	1) Rolling dips will be installed along the main road at locations shown on Figures 2A and 2B to reduce hydrologic connectivity and sediment delivery to the stream network.
10/15/2021 and ongoing	<P> BPTC; Rock Road	1) Roads will be rocked as needed to reduce surface erosion and sediment delivery.
Annually by Nov. 15th and after large storm events (>0.5 in in 24 hr), and prior to the winter snows	<E> BPTC; DRC	1) All existing DRC inlet/outlets will be cleaned/maintained regularly, and ditches cleaned/maintained to ensure proper functioning. 2) Clean/maintain the inboard ditch to ensure proper functioning.
By 10/15/2021	<P> BPTC; Armored RD @ Spring	1) Install an armored rolling dip to drain and disperse the spring flow across the road; and thereby, reduce the potential for additional road surface erosion
	Disturbed Areas	
By 10/15/2021 and annually thereafter	<P> BPTC; DA	1) Disturbed graded areas will be evaluated and treated to improve overall drainage conditions. Bare areas shall be winterized by either spreading seed and then mulch or cover with crushed rock to limit or eliminate sediment transport.
	Erosion/Sediment Control	
Annually by Nov. 15th	<E>/<P> BPTC/W; SM/SW	1) Replace straw mulch and straw wattles in areas that are prone to surface erosion (see Figures 2A and 2B for specific locations)
By 10/15/2021	<P> BPTC; Perched fill/soil	1) Continue working with the Humboldt County Planning Department for a special permit to remove perched fill within a streamside management area near Flat #3.

Schedule	Map Point or Location	Summary of Corrective Actions/Recommendations (see more detailed listing of corrective actions in Appendix A - WRPP)
CA – Cultivation Area CA – Cultivation Waste DA – Disturbed Area DRC – Ditch Relief Culvert OWTS – Onsite Wastewater Treatment System SC – Stream Crossing SM – Straw Mulch SW – Straw Wattle RD – Rolling Dip W – Winterization <E> – Existing <P> – Proposed		
Fertilizer and Amendment Storage		
Annually by Nov. 15th (prior to onset of winter storms)	<P> BPTC/W; Mixing Tank	1) Mixing tanks should be emptied and sealed at the end of the growing season and prior to Nov. 15th.
Petroleum Storage		
ASAP and Ongoing	<E> BPTC; Fuel Tank	1) Fuel storage, fueling areas should have at a minimum have secondary containment and spill kits located near-by to clean-up any potential spills.
	<P> BPTC/W; Small Generator	2) When not in use, all smaller generators should be properly protected from the elements and seasonally stored appropriately indoors.
OWTS		
By 10/15/2022	<P> BPTC	The Order requires one or more county-approved (permitted) OWTS on the Project Site. Continue working towards getting a permitted Onsite Wastewater Treatment Systems (OWTS) installed on your properties.
By 10/15/2022	<P> BPTC; Outhouse (decommission)	1) Decommission outhouse located near CA #4 according to Humboldt County Division of environmental Health (HCDEH) protocols and procedures. 2) Utilize multiple licensed portable toilets until OWTSs are permitted and installed on the Project Site. Keep portable toilet servicing records available on site.
Trash/Refuse, and Domestic Wastewater		
ASAP and Ongoing	<P> BPTC; CW, Refuse Receptacle	1) Follow best management and "housekeeping" practices by separating compostable organic plant matter from soil and root wads. Store soil and compost separately in an area where sidecasting is avoided, where a tarp and straw wattle can easily surround it or keep in weatherproof containers. 2) Make sure all agriculture and domestic waste is placed in a proper refuse receptacle or holding area safe from wildlife until removed from property.
All BPTC measures will conform to the State Water Resources Control Board Order WQ 2019-0001-DWQ guidelines. All BPTC measures are outlined in Section 2 of Attachment A of the General Order.		

2.0 FERTILIZER, PESTICIDE, HERBICIDE, & RODENTICIDE BPTC MEASURES

2.1 Summary Table

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.

Table 2 provides a summary of fertilizer products used at the site, when they are delivered to the site, and how they are stored and used at the site. Table 2 also describes how products are removed from the site or stored to prevent discharge if they are not consumed before the winter season. The landowner reported no pesticide, herbicide or rodenticide use on the Project Site.

Table 2. Fertilizer Storage and Use

Product		When Delivered	How Stored	How Used	How Products Are Removed from the Site or Stored to Prevent Discharge If They Are Not Consumed Before the Winter Season
FERTILIZERS	Cutting Edge-Bloom	Mid -Spring	Secondarily contained metal buildings with concrete floors (Figure 2B).	Directly applied or used in fertilizer tea.	Unfinished products are stored in secondary containment in the agriculture shed. Empty containers are placed in trash and recycled.
	Cutting Edge-Plant Amp				
	Cutting Edge-Uncle John's Blend				
	Cutting Edge-Sugaree				
	Cutting Edge-Mag Amped CA, K				

2.2 Site Map

Figure 2B identifies the locations of fertilizer storage.

2.3 Bulk Fertilizers and Chemical Concentrates

Describe how bulk fertilizers and chemical concentrates are stored, mixed, applied, and how empty containers are disposed.

When not in use, bulk and chemical fertilizers are stored fully under cover, off the ground, and with secondary containment in the metal building/agriculture storage shed (Figure 2B). According to the landowner all fertilizers are applied at the manufacturer recommended rates or less. If fertilizers contain ammonium nitrate, they will be stored in separate locations away from petroleum products. If not done already the compost

area (Figure 2B) should be planted with a winter cover crop or consolidated as much as feasible and covered with plastic sheeting or tarps to prevent mobilization and leaching of any residual chemicals during the wet season. Additionally, all compost piles shall be separated from soils within root wads and any and all plastics or other non-composting materials.

For more information regarding delivery, storage, application, and removal of bulk fertilizers and chemical concentrates, please refer to Table 2, above.

2.4 Spill Prevention and Cleanup

The likelihood of chemical spills will be minimized by storing all fertilizers and other cultivation-related chemicals off the ground, in designated secondary containment and in enclosed structures. In the event of spills on pavement or concrete, solid materials will be removed utilizing a broom/brush and pan or vacuum. Affected paved surfaces will be decontaminated using a mild detergent and water. Liquid chemical spills on pavement or concrete will be captured using absorbent materials. Spills of solid or liquid materials on soil will be cleaned by removal of the spilled materials and contaminated soil using a shovel and/or absorbent materials. Contaminated soil will be stored in a labeled sealed container and disposal of contaminated materials will be conducted in accordance with manufacturer's instructions and local regulations. A spill kit will be provided with fertilizers inside the agriculture storage shed (Figure 2B).

3.0 PETROLEUM PRODUCT BPTC MEASURES

3.1 Summary Table

Table 3, below, summarizes the petroleum products used at the site, when they are delivered to the site, and how they are stored and used at the site.

3.2 Site Map

Figures 2A and 2B identify petroleum product storage locations.

3.3 Handling

Describe how fuels, lubricants, and other petroleum products are stored, mixed, applied, and empty containers are disposed.

Fuel tanks were observed on the property to be in secondary containment, under cover, and strapped to prevent tipping over. Smaller fuel cans were also observed near the storage buildings and should be stored in a secondary containment tray or tote to prevent spillage. Additionally, spill kits should be provided in all areas where generators and refueling take place to mitigate any potential spill and contamination.

Please refer to Table 3, below, for information regarding delivery, storage, application, and disposal of petroleum products.

Table 3. Petroleum Product Storage and Use

Product Name	When Delivered	How Stored	How Used	How Products Are Removed from the Site or Stored to Prevent Discharge If They Are Not Consumed Before the Winter Season
Gasoline	Delivered as needed by Renner Petroleum Project Site personnel	Gasoline is stored within a 500-gallon fuel storage tank with secondary containment, Additionally, gas is transported around the property within smaller gasoline cans, which when not in use are stored with secondary containment	ATV, chainsaws, automobiles	Empty gas cans are properly stored with secondary containment when not in use.
Diesel	Delivered as needed by Renner Petroleum	High-volume gallon storage tank in secondary containment	Generators	Diesel tanks are covered, in secondary storage, and strapped down.
Motor Oil	Delivered as needed by Project Site personnel	Properly stored with secondary containment	ATV, Automobiles, Chainsaws	Empty containers are properly stored within buildings on a concrete pad. and disposed of according to item label.
Propane	Delivered as needed by AmeriGas.	Propane tanks onsite	Heating	Propane tanks need to be placed on a concrete foundation, strapped down and under cover.

3.4 Spill Prevention and Cleanup

The likelihood of petroleum spills will be minimized by storing all petroleum off the ground and in designated enclosed containers and structures. Spill cleanup will be initiated as quickly as possible after occurrence. Liquid petroleum spills on pavement or concrete will be captured using absorbent materials. Spills of liquid materials on soil will be cleaned by removal of the spilled materials and contaminated soil using a shovel and/or absorbent materials. Contaminated soil will be stored in a labelled sealed container. Disposal of contaminated materials will be conducted in accordance with manufacturer's instructions and local regulations. Spill prevention cleanup kits will be readily available and located where fuel is stored and where refueling occurs. A spill kit is located along with the fuel in the appropriate storage locations (Figure 2A and 2B).

4.0 TRASH/REFUSE, AND DOMESTIC WASTEWATER BPTC MEASURES

4.1 Types, Containment, and Disposal of Trash/Refuse

Describe the types of trash/refuse that will be generated at the site. Describe how the material is contained and properly disposed of.

Trash and refuse typically includes domestic waste such as general household trash and organic materials. Cultivation related wastes include organic wastes (cannabis stems, leaves, roots, etc.), plastic pots and planting materials, plastic containers, and degraded plastic tarps. Secure cannabis waste receptacles should be kept at every cultivation area and be designated for organic and inorganic waste bins. Cannabis composting is already active on the property and will follow BPTC measures to tarp or keep covered, and away from steepened slopes and waterways. Inorganic waste like plastic containers will be discarded according to their labeling and recycled, if possible.

Domestic waste, including plastic, metal and aluminum recyclables, food packaging material, and organic by-product from food consumption, should be separated into organic and inorganic waste to promote reuse and cut down on methane emissions. Organic composting was observed onsite (Figure 2B) and shall follow proper protocols to reduce scavenging and promote reuse in domestic garden beds. Inorganic waste will be separated into recyclable and non-recyclable material that will be hauled offsite.

Waste is hauled off the property regularly.

Site Map

See site maps, Figures 2A and 2B, which show trash/refuse and cultivation waste storage locations.

4.2 Domestic Wastewater Generation and Disposal

4.2.1 Domestic Wastewater Generation

Describe the number of employees, visitors, or residents at the site [per unit time]. Describe the types of domestic wastewater generated at the site (e.g., household generated wastewater or chemical toilet).

There are four employees working at the property during Most of the season. During peak times, as many as ten may be onsite during the daytime. For the most part, employees come to the property daily to work their shift.

Only domestic wastewater waste is generated at the Project Site.

4.2.2 Domestic Wastewater Disposal

Describe how the domestic wastewater is disposed.

4.2.2.1 Permitted onsite wastewater treatment system (e.g., septic tank and leach lines).

The Order requires one or more county-approved (permitted) OWTS on each Project Site. The new wastewater treatment system(s) must be designed to serve the number of residents and workers that will occur at

the Project Site when your cultivation-related operations are at their peak. The landowner is currently working with PWA to design permitted Onsite Wastewater Treatment System (OWTS). Once the OWTS has been permitted and installed, proof of permitting through HCDEH is required onsite at all times.

4.2.2.2 Chemical toilets or holding tank. If so, provide the name of the servicing company and the frequency of service.Please provide name of company and any other details you may have on this.

Portable (chemical) toilets shall be utilized until the permitted OWTSs have been installed. Maintain servicing records for these portable toilets for possible inspection.

4.2.2.3 Outhouse, pit privy, or similar. Use of this alternative requires approval from the Regional Water Board Executive Officer; include the approval from the Executive Officer and any conditions imposed for use of this alternative.

There is one outhouse, near CA #4, that is currently not in use and will be decommissioned. Refer to the HCDEH regarding the proper steps or permits to decommission the outhouse.

4.2.3 Site Map

Figures 2A and 2B identify the locations of proposed domestic wastewater treatment storage and dispersal area(s).

5.0 WINTERIZATION BPTC MEASURES

5.1 Winterization Activities

Describe activities that will be performed to winterize the site and prevent discharges of waste. The description should address all the issues listed above.

The landowner will implement appropriate BPTCs to adequately contain the stockpiled potting soil and prevent mobilization and delivery to surface waters or groundwater. Winterization measures applied to bare soil areas, garden areas, and cultivation areas may include the following: 1) turning and covering soil beds with tarps; 2) mulching bare soil areas; 3) planting of cover crops; 4) planting of winter crops; 5) covering bulk soil piles and installing fiber rolls around the perimeter; and 6) disconnecting water lines not in use. If fertilizers and amendments contain ammonium nitrate, they will be stored in separate locations away from petroleum products. Amendments will be brought inside during the growing season and stored indoors or under tarps such that they are protected from the elements.

Please refer to Table 1, above, for more information regarding winterization activities and implementation schedules.

5.2 Maintenance of Drainage or Sediment Capture Features

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.

Drainage features such as stream crossing and ditch relief culverts should be inspected and cleared of any potential obstructions before the onset of winter and after each storm event that produces at least 0.5-inch/day or 1.0-inch/7 days of precipitation.

Other drainage features such as rolling dips, ditches, and outsloped portions of road should be inspected for berms at their outfalls after any road grading activities and periodically throughout the season, especially when cultivation activities increase onsite. In addition, sediment capture and erosion control measures such as straw wattles and straw and mulch should be replaced as they decay until natural vegetation takes over.

Please refer to Table 1, above, for more information regarding maintenance of drainage and sediment capture feature BPTCs and implementation schedules.

5.3 Revegetation

Describe any revegetation activities that will occur either at the beginning or end of the precipitation season.

No land disturbance activities requiring winter revegetation are planned or anticipated with the exception of any application of native erosion control seed or implementation of additional erosion or sediment control BPTCs as needed to protect water quality.

5.4 BPTC Measures That Cannot Be Completed Before Onset of Winter

If any BPTC measure cannot be completed before the onset of winter period, contact the Regional Water Board to establish a compliance schedule.

All BPTC measures are scheduled to be completed before the onset of the winter period except for stream crossing upgrades, rolling dip installations, excavation of unstable/perched fill, and OWTS installation. These activities are scheduled to be completed by 10/15/2021 (Table 1). If any BPTC measures cannot be implemented according to the schedule timelines in Table 1, above, or as defined in the LSAA or other permits, the North Coast Regional Water Quality Control Board will be contacted, and a compliance schedule established.

5.5 Legacy Waste Discharge Issues for Specific Regions

For Region 1 Dischargers, describe any activities that will be performed to address legacy waste discharge issues. Region 6 Dischargers should consult with Regional Water Board staff to confirm if any other activities in addition to BPTCs are necessary to address legacy waste discharge issues.

See Section 1.1.2. Access, Maintenance and Storm Water, for more information regarding any legacy waste discharge issues.

IV. LEGALLY RESPONSIBLE PERSON CERTIFICATION/SIGNATURES

This Site Management Plan has been prepared by Pacific Watershed Associates on behalf of the Discharger.

"I have read and understand this Site Management Plan, including Section II – Certifications, Conditions and Limitations, and the associated attachments. I agree to comply with the requirements of the State Water Resources Control Board (SWRCB) Cannabis Cultivation Policy Order WQ 2019-0001-DWQ, General Waste Discharge Requirements and Waiver of Waste Discharge Requirements for Discharges of Waste Associated with Cannabis Cultivation Activities (General Order), including the recommendations and actions listed in this Site Management Plan."

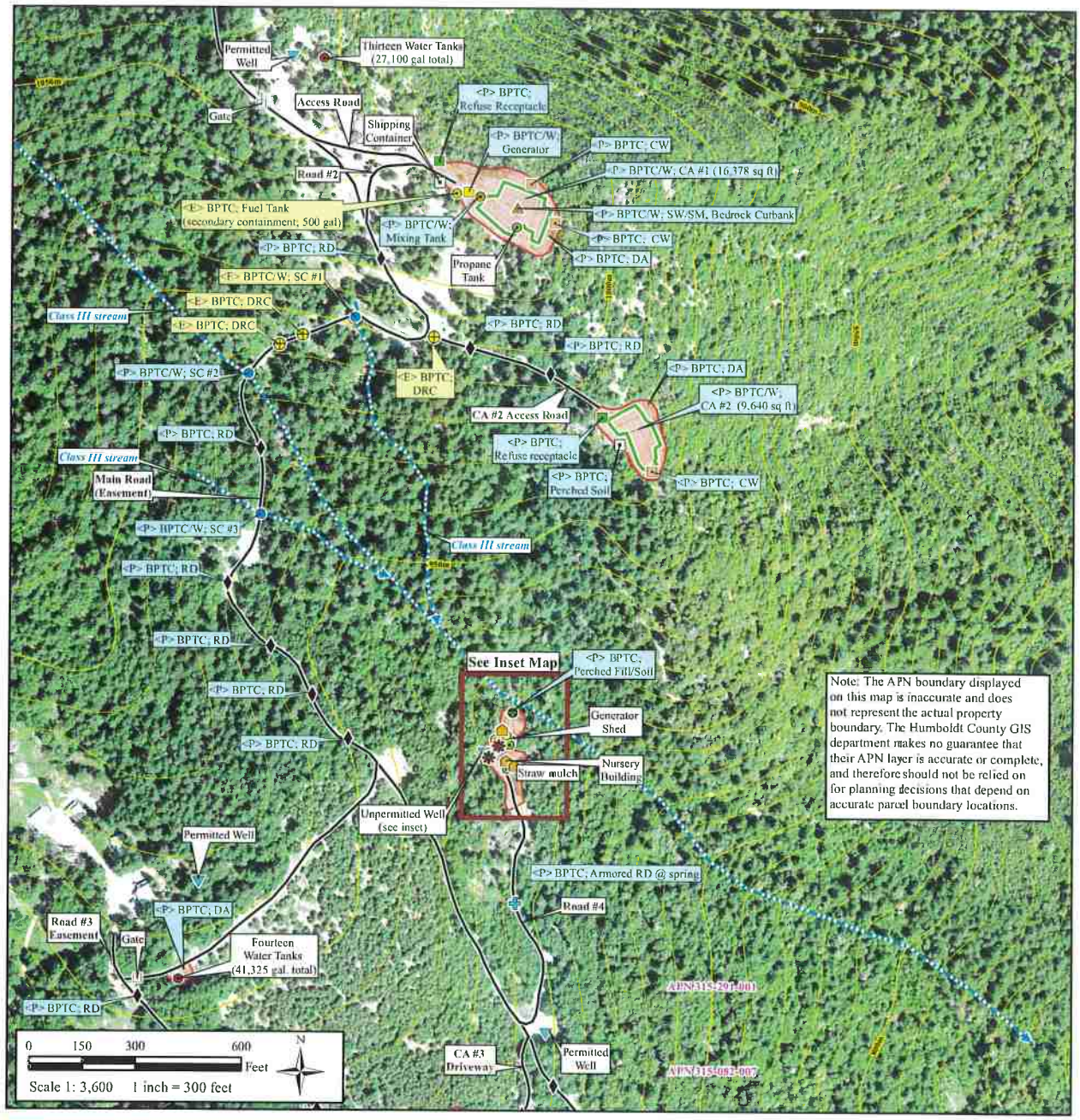
"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate,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

Name of Legally Responsible Person (LRP): _____

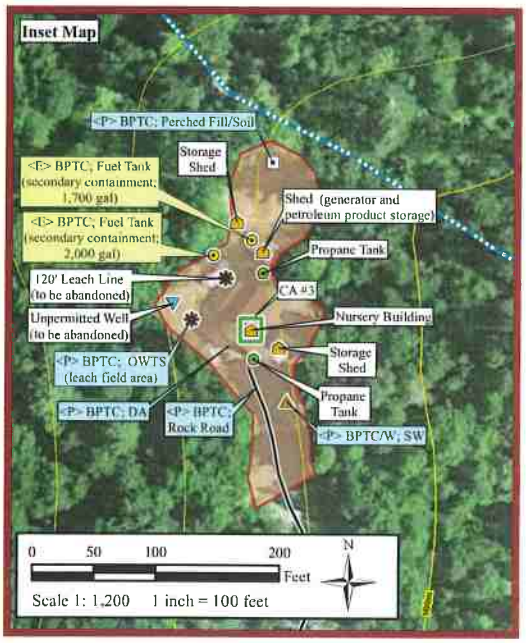
Title (owner, lessee, operator, etc.): _____

Signature: _____ Date: _____

Figure 2A. Site Management Plan Site Map for APNs 315-291-001 and 315-082-007, located on Friday Ridge Road, Blue Lake, California.



Note: The APN boundary displayed on this map is inaccurate and does not represent the actual property boundary. The Humboldt County GIS department makes no guarantee that their APN layer is accurate or complete, and therefore should not be relied on for planning decisions that depend on accurate parcel boundary locations.



- Stream crossing
- Rolling dip
- Ditch relief culvert
- Cultivation waste
- Refuse receptacle
- Spring
- Water tank
- Propane tank
- Mixing tank
- Fuel tank
- Straw Wattle/Straw Mulch
- House
- Non-residential structure
- Well
- Outhouse/septic system
- Generator
- Gate
- Other location
- <P> BPTC or W site location
- <E> BPTC or W site location

- Cultivation area
- Disturbed area
- Parcel boundary
- Class III stream
- Access roads

Abbreviations:

BPTC - Best practicable treatment or control
CA - Cultivation area
CW - Cultivation waste
DA - Disturbed area
DRC - Ditch relief culvert
RD - Rolling dip
SC - Stream crossing
SM - Straw mulch
SW - Straw wattle
W - Winterization
<E> - Existing
<P> - Proposed

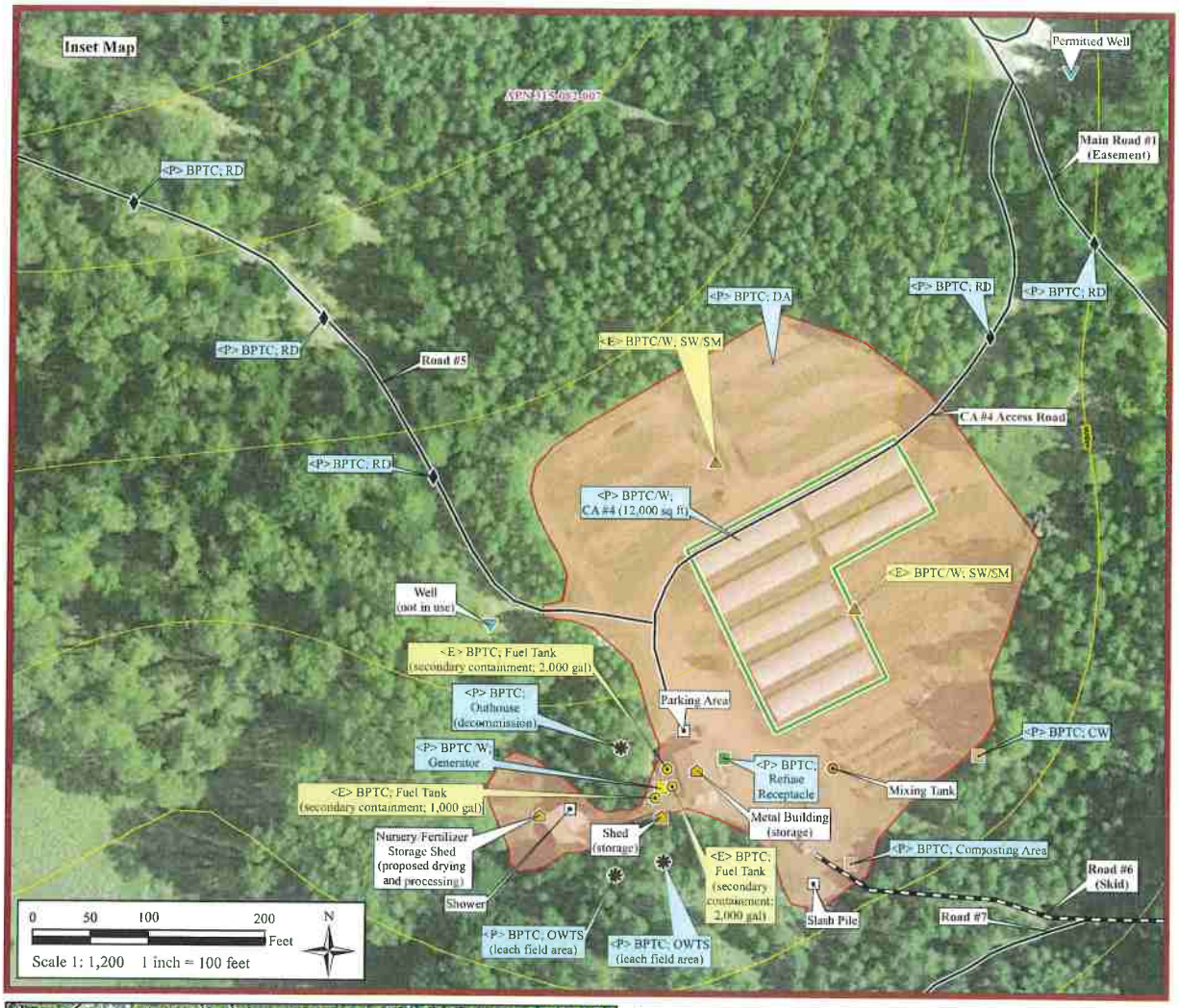
Contour interval: 5 m
Imagery: Google 2016, 2019
Parcel boundary data:
2020 Humboldt County GIS

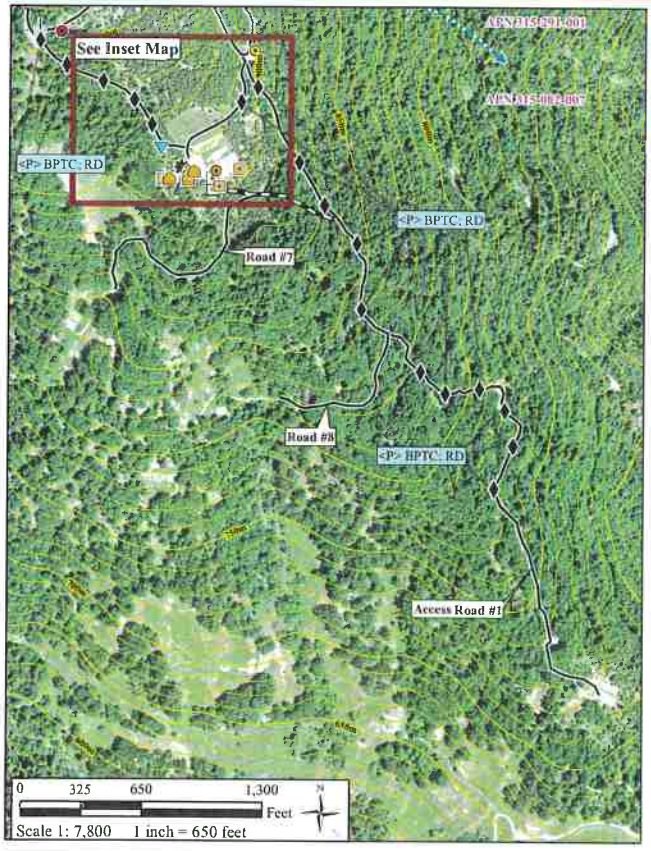
Prepared August 2020 by:
Pacific Watershed Associates
www.pacificwatershed.com

Figure 2A. Site Management Plan Site Map for APN 315-291-001 and 315-082-007, located on Friday Ridge Road, Blue Lake, California.

P:\GIS\53811 Visser 2017\53811 Visser WRPP\53811 Visser SMP site map 2A.mxd

Figure 2B. Site Management Plan Site Map for APNs 315-291-001 and 315-082-007, located on Friday Ridge Road, Blue Lake, California.





- Rolling dip
- Cultivation waste
- Refuse receptacle
- Straw wattle/straw mulch
- Water tank
- Mixing tank
- Fuel tank
- Non-residential structure
- Well
- Outhouse/septic system
- Generator
- Gate
- Other location
- <P> BPTC or W site location
- <E> BPTC or W site location

- Disturbed area
- Cultivation area
- Parcel boundary
- Class III stream
- Access roads
- Skid road

Abbreviations:
BPTC - Best practicable treatment or control
CA - Cultivation area
CW - Cultivation waste
DA - Disturbed area
OWTS - Onsite wastewater treatment system
RD - Rolling dip
SM - Straw mulch
SW - Straw wattle
W - Winterization
<E> - Existing
<P> - Proposed

Note: The APN boundary displayed on this map is inaccurate and does not represent the actual property boundary. The Humboldt County GIS department makes no guarantee that their APN layer is accurate or complete, and therefore should not be relied on for planning decisions that depend on accurate parcel boundary locations.

Contour interval: 5m
Imagery: Google 2016, 2019
Parcel boundary data: 2020 Humboldt County GIS

Prepared August 2020 by:
Pacific Watershed Associates
www.pacificwatershed.com

Figure 2B. Site Management Plan Site Map for APN 315-291-001 and 315-082-007, located on Friday Ridge Road, Blue Lake, California.

P:\GIS\5381 Visser 2017\5381 Visser WRPP 53811 Visser 2018 LSAA site map 2B.mxd

APPENDIX A

Water Resources Protection Plan (WRPP) for

Humboldt County APNs **315-291-001 and 315-082-007**

Geologic and Geomorphic Studies ♦ Wildland Hydrology ♦ Civil Engineering ♦ Erosion Control ♦ Soil/Septic Evaluation
Pacific Watershed Associates ♦ P.O. Box 4433 ♦ Arcata, California, 95518 ♦ Ph: (707) 839-5130 ♦ Fx: (707) 839-8168
www.pacificwatershed.com

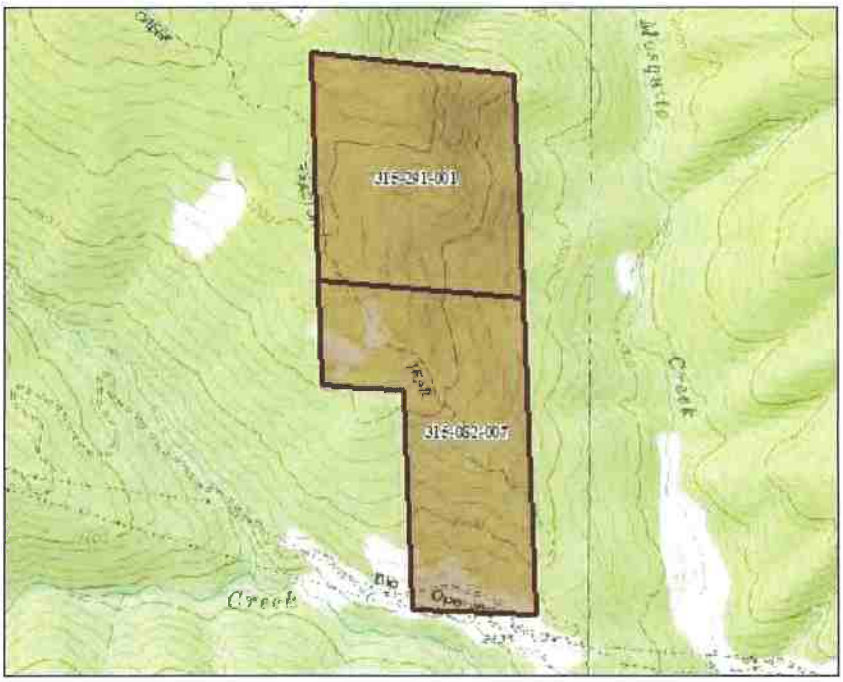
Water Resource Protection Plan (WRPP)

for

APNs 315-291-001 & 315-082-007

Located at
Friday Ridge Road
Blue Lake, California

October 2018



Prepared for:
WD ID# 1B171800CHUM
PWA ID #180102120502-53811
Friday Ridge Rd, Blue Lake, CA

Prepared by:
Michelle Robinson, Staff Geologist
micheller@pacificwatershed.com
Pacific Watershed Associates Inc.
P.O. Box 4433, Arcata, CA 95518
(707) 839-5130

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Water Resource Protection Plan (WRPP)
APNs 319-291-001 & 315-082-007
Friday Ridge Rd.
Blue Lake, California

1.0 PROJECT SUMMARY

This report documents Pacific Watershed Associate's (PWA)[1] Water Resource Protection Plan (WRPP) for APNs 315-291-001 & 315-082-007 located at Friday Ridge Rd, Blue Lake, CA, as shown on Figure 1. This property is located approximately 20.7 miles southeast of Blue Lake, Humboldt County, CA, and hereinafter is referred to as the "Project Site." Based on either site conditions and/or total cultivation area, this Project Site falls within **Tier 2** of the North Coast Regional Water Quality Control Board's (NCRWQCB) Order No. 2015-0023, Waiver of Waste Discharge and General Water Quality Certification for Discharges of Waste Resulting from Cannabis Cultivation and Associated Activities or Operations with Similar Environmental Effects ("Order"). Properties that fall into Tier 2 of the Order are required to develop a WRPP. Therefore, as required, this WRPP has been developed for you based on site inspections made by PWA on your property. PWA's recommendations for any remediation or corrective actions are a result of water quality requirements under the Order, including Best Management Practices (BMPs) designed to meet those requirements (Appendix A). This WRPP documents the findings of site visits conducted on June 15, August 3 and September 28, 2017 by PWA Geologists, Kathy Moley, Michelle Robinson, and Jack Skeahan and PWA Environmental Scientist, Dylan Kirkley.

2.0 CERTIFICATIONS, LIMITATIONS AND CONDITIONS

This WRPP has been prepared by, and under the responsible charge of a California licensed geologist (PG) or certified professional in erosion and sediment control (CPESC) at PWA and all information herein, including treatment recommendations, are based on observations, data and information collected by PWA staff.

This WRPP has been prepared to: 1) describe the general conditions of the property at the time of our inspection; 2) summarize the site conditions and how they relate to the NCRWQCB twelve (12) Standard Conditions of the Order; 3) provide recommendations for remediation and/or correction of existing or potential water quality threats or impacts; and 4) recommend work to be conducted on this property to meet the 12 Standard Conditions of the Order. The analysis and recommendations submitted in this WRPP are based on PWA's evaluation of the Project Site and your activities which fall under the Order.

In this WRPP we have described the current conditions of the property and any water resource and water quality risk factors we observed at the time of our site inspection. PWA is not responsible for problems or issues we did not observe on our site inspection, or for changes that have naturally occurred or been made to the property after our site review. The interpretations and conclusions presented in this WRPP are based on a reconnaissance level site investigation of inherently limited scope. Observations are qualitative, or semi-quantitative, and confined to surface expressions of limited extent and artificial exposures of subsurface materials. Interpretations of problematic

[1] PWA is an approved Third Party Program for the North Coast Regional Water Quality Control Board's (NCRWQCB) Order No. 2015-0023, Waiver of Waste Discharge and General Water Quality Certification for Discharges of Waste Resulting from Cannabis Cultivation and Associated Activities or Operations with Similar Environmental Effects.

geologic, geomorphic or hydrologic features such as unstable hillslopes, erosional processes and water quality threats are based on the information available at the time of our inspection and on the nature and distribution of existing features we observed on the property.

We have also included recommendations for remediation and/or correction that are based on these observations. The recommendations included in this WRPP are professional opinions derived in accordance with current standards of professional practice, and are valid as of the date of field inspection. No other warranty, expressed or implied, is made. Furthermore, to ensure proper applicability to existing conditions, the information and recommendations contained in this report shall be regularly reevaluated and it is the responsibility of the landowner and/or lessee operating under the Order to ensure that no recommendations are inappropriately applied to conditions on the property that have changed since the recommendations were developed.

If site conditions have changed for any reason, the site should be reevaluated and the WRPP revised and updated as required. These conditions include any changes in land management activities or property conditions that have occurred since our site visit (regardless of what they are, how they occurred or who performed them). Similarly, if the landowner/lessee uses portions of this property not identified or covered under the current WRPP, this Water Resource Protection Plan will need to be updated with the new information, including possible additions or changes to the recommended remedial or corrective actions and BMPs (Appendix A).

If the property owner has enrolled their property under the Order, they are responsible for complying with all the requirements thereunder, regardless of who is operating or cultivating on that property. If the property is being formally or informally leased to an operator, and the lessee has enrolled under the Order, then the lessee is responsible for complying with the Order's requirements, including the WRPP and related recommendations and requirements. If the lease expires or the lessee is not otherwise available or does not respond to information requests by the NCRWQCB or PWA, then the landowner automatically assumes responsibility under the Order for the requirements therein and for all related penalties or actions brought by the NCRWQCB.

If at any time in the future the property is to transfer ownership, it is the responsibility of the current owner, or their representatives, to ensure that the information and recommendations contained herein are called to the attention of any future owner or agent for the property. Unless this WRPP is modified by the NCRWQCB, or another approved Third Party Program representative, the findings and recommendations contained in this WRPP shall be utilized as a tool while implementing the recommendations made within this WRPP. Necessary steps shall be taken to see that contractor(s) and subcontractor(s) carry out such recommendations in the field in accordance with the most current WRPP and BMP standards.

As a Third Party Program, PWA will be responsible for the data, interpretations and recommendations developed by PWA, but will not be responsible for the interpretation by others of that information, for implementation of corrective actions by others, or for additional or modified work arising out of those plans, interpretations and recommendations. PWA assumes no liability for the performance of other workers or suppliers while following PWA's recommendations in the WRPP, unless PWA is under contract to perform or oversee those activities. Additionally, PWA is not responsible for changes in applicable or appropriate standards beyond our control, such as those arising from changes in legislation or regulations, or the

broadening of knowledge which may invalidate or alter any of our findings or recommended actions.

Any WRPP plan review or construction management services that may be needed or identified in the recommendations sections of this report are separate tasks from the preparation of this WRPP, and are not a part of the contract under which this WRPP was prepared. If requested, additional PWA field inspections, surveys, WRPP revisions/updates, project layout, design, permitting, construction oversight/management, or other related services arising from tasks described and recommended in the WRPP may be performed under separate agreements requiring advance notice and contracting.

PWA's services consist of professional opinions and recommendations made in accordance with generally accepted principles and practices. No warranty, expressed or implied, or merchantability or fitness, is made or intended in connection with our work, by the proposal for consulting or other services, or by the furnishing of oral or written reports or findings. If the client desires assurances against project failures, they shall obtain appropriate insurance through their own insurance broker or guarantor.

This WRPP is considered a living document and shall be updated at least annually, or sooner if conditions have changed or land management actions have been undertaken after our site inspection. As an official part of the Waiver Program, this WRPP (including all its text, appendices, maps and photos) shall remain onsite and available for NCRWQCB staff to inspect and review upon request.

Prepared by:

Michelle Robinson

Michelle Robinson
Staff Geologist
Pacific Watershed Associates, Inc.
P.O. Box 4433, Arcata, California 95518

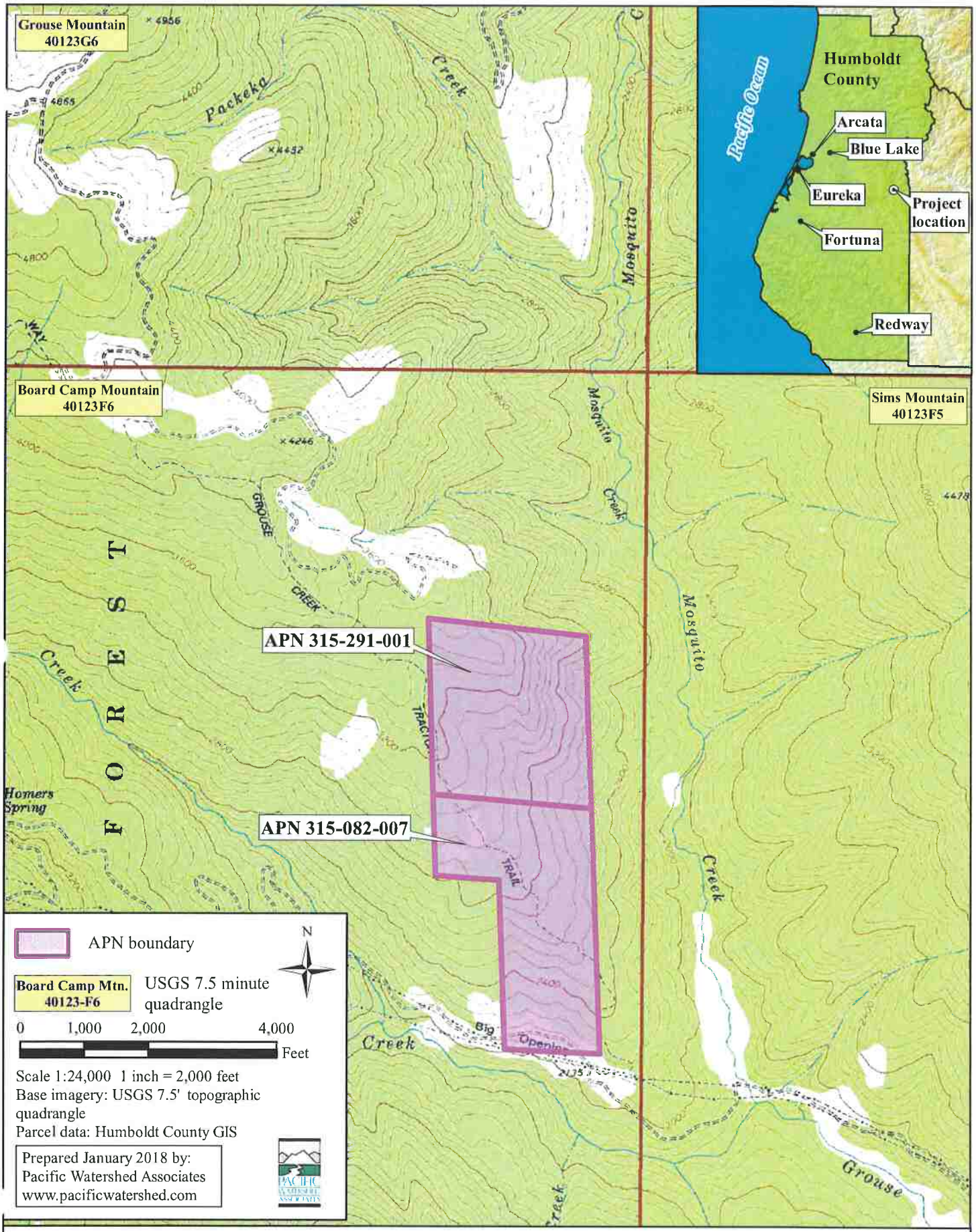

Figure 1. General Location map for WDID1B171800CHUM, APN 315-291-001 and 315-082-007, located out Friday Ridge Road, Blue lake, California.

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3.0 INTRODUCTION

This Water Resources Protection Plan (WRPP) summarizes the results of Pacific Watershed Associate's (PWA) site visit and subsequent analysis and documentation of site conditions on APNs 315-291-001 & 315-082-007 located at Friday Ridge Rd, Blue Lake, California, as shown on Figure 1 and hereinafter referred to as the "Project Site." The WRPP describes and addresses the required elements and compliance with the 12 Standard Conditions established by the North Coast Regional Water Quality Control Board's (NCRWQCB) Order No. 2015-0023 to protect water quality from cannabis cultivation and related activities (Order). PWA has identified certain areas where the Project Site does not fully meet all 12 of the Standard Conditions of the Order. Section 4, below, identifies and discusses each of the 12 Standard Conditions as related to your property with regard to compliance with the NCRWQCB's Order.

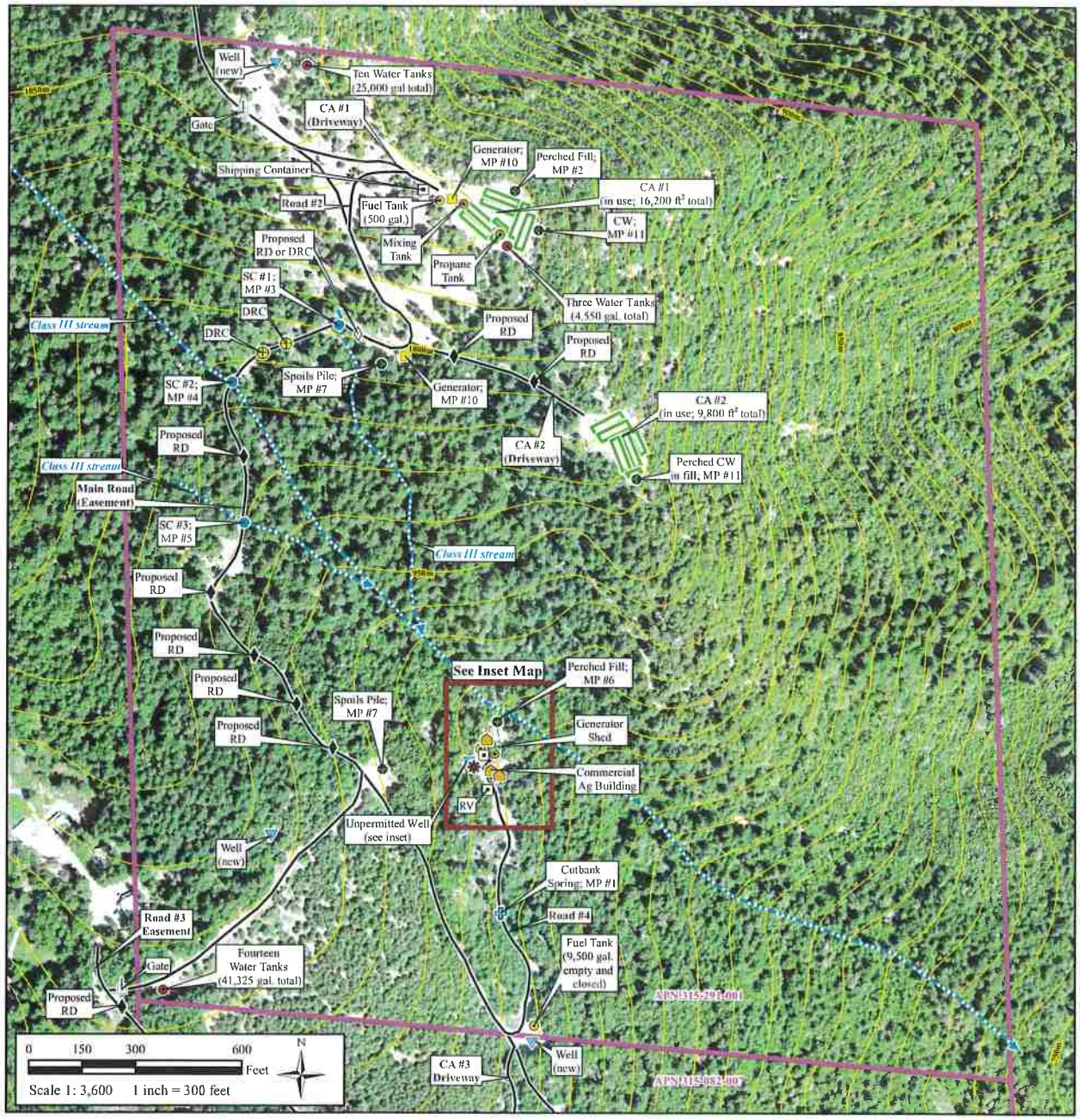
The WRPP contains the following required sections:

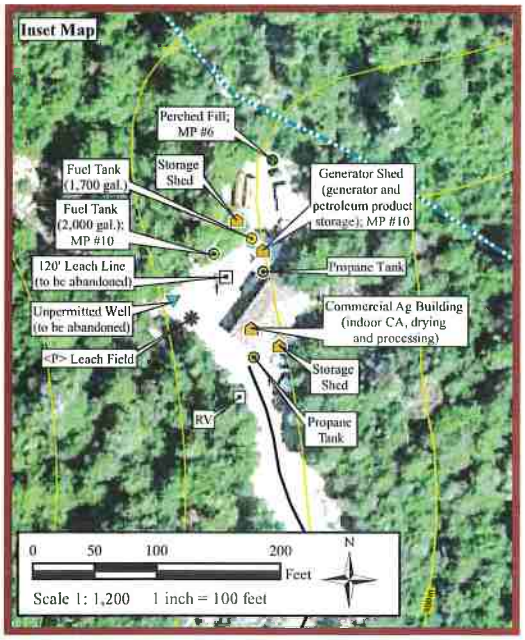
1. Legible map (Figure 2) depicting the required site elements and features associated with the 12 Standard Conditions of the Order;
2. Description of current site conditions, compliance with the 12 Standard Conditions, and prioritized remediation or corrective actions needed to bring the site into compliance with the requirements of the Order;
3. A monitoring and inspection plan to ensure BMPs used to protect and prevent impacts to water quality are being implemented as recommended by PWA (implementation monitoring), and that they are effective (effectiveness monitoring);
4. A water use plan, including water sources, water use and storage rights documentation, monthly water use documentation (quantity), and water conservation measures that are employed to prevent adverse impacts to water quality and water quantity in the watershed;
5. List of fertilizers and chemicals stored and used onsite, including a log of the frequency and quantity of these materials used.

4.0 STANDARD CONDITIONS CHECKLIST FOR APNs 315-291-001 & 315-082-007 as of 09/28/2017

The NCRWQCB has developed a set of 12 Standard Conditions that shall be followed and implemented to protect and improve water quality as required under the NCRWQCB's Order. For a property to become compliant with the Order, all 12 Standard Conditions must be fully satisfied.

The following section details the specific requirements listed and described in the Order for each of the 12 Standard Conditions. Each Standard Condition has from 1 to 6 sub-requirements (*listed in italic type*), each of which must be satisfied to protect water quality and comply with the Order. The checklist developed by PWA for your property indicates: 1) whether the Standard Condition or Standard Condition sub-requirement was adequately met as of the date of PWA's field inspection, 2) PWA's observations and comments related to the Standard Condition or Standard Condition sub-requirement, 3) whether a relevant photo has been taken and included in the WRPP, and 4) recommended corrective or remedial actions that need additional work to meet the requirements of the Order.





- Stream crossing
- Monitoring point
- Proposed rolling dip
- Proposed rolling dip or ditch relief culvert
- Ditch relief culvert
- Cutbank spring
- Water tank
- Propane tank
- Mixing tank
- Fuel tank
- House
- Non-residential structure
- Well
- Outhouse/septic system
- Generator
- Gate
- Other location

- Cultivation area
- Parcel boundary (modified by landowner)
- Class III stream
- Access roads

Abbreviations:
SC - Stream crossing
CA - Cultivation area
MP - Monitoring point
RD - Rolling dip
DRC - Ditch relief culvert
CW - Cultivation waste
Ag - Agriculture

Contour interval: 5m
Imagery: Google 2016
Parcel boundary data: Humboldt County GIS (modified per landowner)

Prepared November 2018 by:
Pacific Watershed Associates
www.pacificwatershed.com

Figure 2A. Site map for WDID1B171800CHUM, APN 315-291-001 and 315-082-007, located on Friday Ridge Road, Blue Lake, California.

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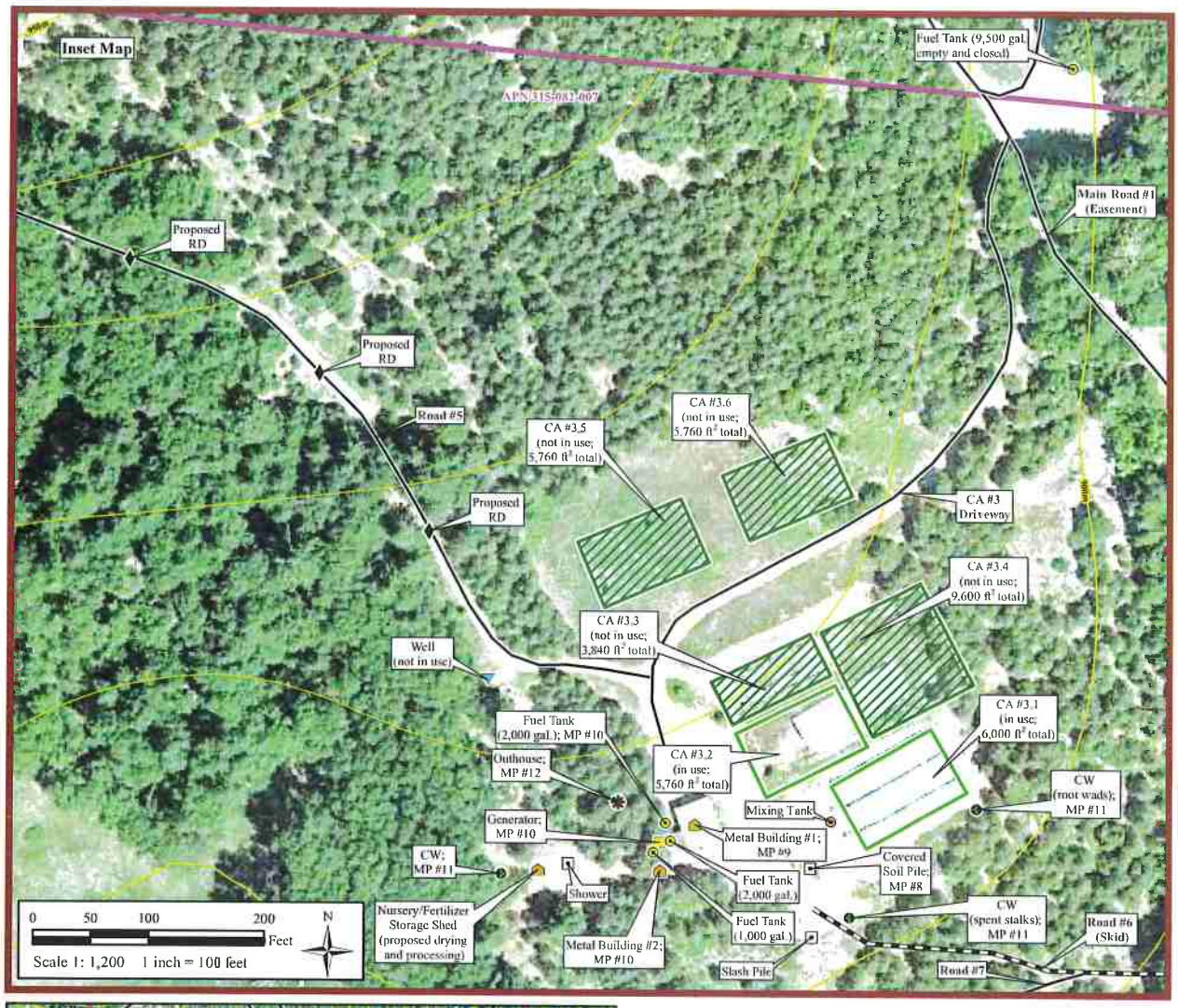

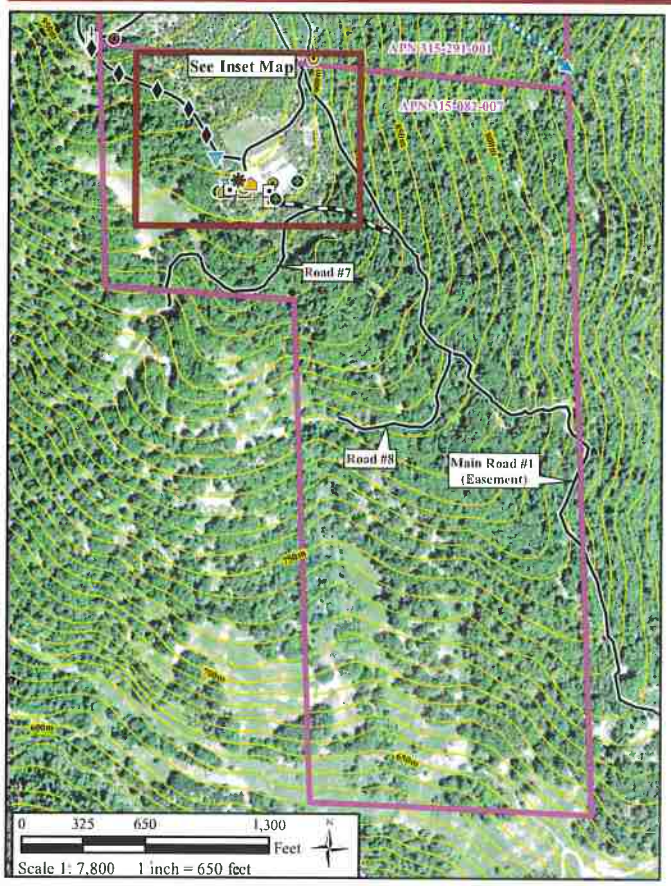

- Stream crossing
- Monitoring point
- Proposed rolling dip
- Proposed rolling dip or ditch relief culvert
- Ditch relief culvert
- Cutbank spring
- Water tank
- Propane tank
- Mixing tank
- Fuel tank
- House
- Non-residential structure
- Well
- Outhouse/septic system
- Generator
- Gate
- Other location

- Cultivation area (in use)
- Cultivation area (not in use)
- Parcel boundary (modified by landowner)
- Class III stream
- Access roads
- Skid road

Abbreviations:
SC - Stream crossing
CA - Cultivation area
MP - Monitoring point
RD - Rolling dip
DRC - Ditch relief culvert
CW - Cultivation waste

Contour interval: 5m
Imagery: Google 2016
Parcel boundary data: Humboldt County GIS (modified per landowner)

Prepared November 2018 by:
Pacific Watershed Associates
www.pacificwatershed.com

Figure 2B. Site map for WDID1B171800CHUM, APN 315-291-001 and 315-082-007, located on Friday Ridge Road, Blue Lake, California.

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pollution threats along these routes. The most important sites to examine include road or skid trail crossings of stream channels and potentially unstable fillslopes where roads were built across steep hillslopes or in riparian zones. If existing or potential legacy sediment sources that could impact surface waters are identified in the field, they will need to be treated using erosion prevention and erosion control treatments (see Appendix A).

b) *Roads, driveways, trails, and other defined corridors for foot or vehicle traffic of any kind shall have adequate ditch relief drains or rolling dips and/or other measures to prevent or minimize erosion along the flow paths and at their respective outlets.*

Meets condition? No
Observations: See 4.1a, above. Roads lack sufficient drainage structures to effectively disperse flow and minimize hydrologic connectivity at stream crossings.
Photos: Photo 1; MP #1
Corrective or remedial actions needed: See 4.1a, above.

c) *Roads and other features shall be maintained so that surface runoff drains away from potentially unstable slopes or earthen fills. Where road runoff cannot be drained away from an unstable feature, an engineered structure or system shall be installed to ensure that surface flows will not cause slope failure.*

Meets condition? No
Observations/Comments: See 4.1a, above. PWA observed perched fill on the North side of CA #1. Poor grading practices, such as uncontrolled sidecasting and lack of compaction, have resulted in several locations where fill material, usually mixed with slash and cultivation waste (CW), have been sidecast or perched over breaks-in-slope at the edge of graded pads. Unstable fill within the riparian buffer is addressed in section 4.3, below. Areas where perched fill is mixed with cultivation waste (CW), such as spent soil and plant material, is addressed in section 4.10. A grading plan has been developed for the project site.
Photos: Photos 2-3; MP #2
Corrective or remedial actions needed: See 4.1a, above. Implement appropriate stabilization and erosion control BMPs (seed, straw mulch, etc.) to disturbed areas and bare soils to minimize surface erosion and sediment transport. Also see property Grading Plan for detailed correction actions to minimize surface erosion and sediment delivery to stream channels, and to mitigate any other potential impacts to water quality at the graded pads.

d) *Roads, clearings, fill prisms, and terraced areas (cleared/developed areas with the potential for sediment erosion and transport) shall be maintained so that they are hydrologically disconnected, as feasible, from surface waters, including wetlands, ephemeral, intermittent and perennial streams.*

Meets condition? No
Observations: See 4.1a above. Roads lack sufficient drainage structures to effectively disperse flow and minimize hydrologic connectivity at stream crossings.
Photos: Photo 1; MP #1
Corrective or remedial actions needed: See 4.1a, above.

e) *Ditch relief drains, rolling dip outlets, and road pad or terrace surfaces shall be maintained to promote infiltration/dispersal of outflows and have no apparent erosion or evidence of soil transport to receiving waters.*

Meets condition? No
Observations/Comments: See 4.1a and 4.1c above.
Photos: Photos 1-3; MPs #1-2
Corrective or remedial actions needed: See 4.1a, above and attached grading plan.

f) *Stockpiled construction materials are stored in a location and manner so as to prevent their transport to receiving waters.*

Meets condition? Yes
Observations/Comments: No construction materials were observed to be a threat to water quality on the Project Site.
Photos: None
Corrective or remedial actions needed: None

4.2 Standard Condition #2. Stream Crossing Maintenance

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

Meets condition? No
Observations/Comments: Three (3) stream crossings (SC) were identified on the Project Site during our reconnaissance investigation. They include:

1) SC #1 - a 18-inch diameter metal culvert on a Class III watercourse, installed slightly high in the fill, with a partially plugged (~10%) inlet;
2) SC #2 - a 12-inch diameter plastic culvert on a Class III watercourse, installed askew to the natural channel with a 90% plugged outlet from recent road grading activities;
3) SC #3 - a 18-inch diameter metal culvert on a Class III stream, installed slightly high in the fill, with a partially plugged (~20%) inlet and plugged/obscured outlet from recent grading activities;

SC #1, and SC #2 are undersized for the 100 year design flow (see Table 4.2).

Photos: Photos 4-9; MP #3-5
Corrective or remedial actions needed: Upgrade SC #2 by installing a new 30-inch diameter culvert, in line and at grade with the natural channel. Upgrade SC #3 by installing a new 24-inch diameter culvert, in line and at grade with the natural channel. The culvert at SC #1 is installed slightly high in the fill, with a reduced gradient, causing roughly 10% of the inlet to be plugged with sediment and debris, it is appropriately sized and functioning properly with no significant erosion. All current and upgraded culverts should be maintained regularly by cleaning the inlets to prevent plugging and minimize impacts to water quality and aquatic organisms, as required by the Order. For additional information on stream crossing treatments, refer to the CDFW 1600 LSAA agreement, developed by PWA, once it has been approved.

Table 4.2. Culvert Sizing					
Stream crossing number	Existing culvert diameter (in)	Watershed area (acres)	Mean annual rainfall (in)	Q100 – discharge estimate for 100-yr storm (cfs)	Recommended culvert diameter (in)
SC #1	18	2	76	3	18
SC #2	12	15	76	20	30
SC #3	18	9	76	12	24

b) *Culverts and stream crossings shall be designed and maintained to address debris associated with the expected 100-year peak streamflow.*

Meets condition? No
Observations/Comments: SC #2 and SC #3 are not designed to allow for the passage of expected 100-year peak stream flow and the associated debris.
Photos: Photos 6-9; MP #4-5
Corrective or remedial actions needed: See 4.2a, above. Once approved, see PWA's 1600 LSAA agreement with CDFW for additional information on stream crossing treatments.

c) *Culverts and stream crossings shall allow passage of all life stages of fish on fish-bearing or restorable streams, and allow passage of aquatic organisms on perennial or intermittent streams.*

Meets condition? No
Observations/Comments: The outlet at SC #2 is 90% plugged and does not allow for aquatic organism passage.
Photos: Photo 6-7; MP #4
Corrective or remedial actions needed: See 4.2a, above. Once approved, see PWA's 1600 LSAA agreement with CDFW for additional information on stream crossing treatments. All crossings of intermittent and perennial streams should provide passage for aquatic organisms.

d) *Stream crossings shall be maintained so as to prevent or minimize erosion from exposed surfaces adjacent to, and in the channel and on the banks.*

Meets condition? No
Observations/Comments: PWA staff observed sediment being delivered to SC #1 from approximately 150 feet of left road inboard ditch.
Photos: None
Corrective or remedial actions needed: See 4.1a and Figure 2 for road treatments designed to regularly disperse concentrated road runoff and greatly reduce eroded sediment from being delivered to any watercourse. Also see general comments below.

e) *Culverts shall align with the stream grade and natural stream channel at the inlet and outlet where feasible.*

Meets condition? No
Observations/Comments: See 4.2a, above
Photos: Photos 4-9; MP #3-5
Corrective or remedial actions needed: See 4.2a, above; also see general comments below.

f) Stream crossings shall be maintained so as to prevent stream diversion in the event that the culvert/crossing is plugged, and critical dips shall be employed with all crossing installations where feasible.

Meets condition? No
Observations/Comments: SC #1-3 have diversion potential
Photos: Photos 4-9; MP #3-5
Corrective or remedial actions needed: Install critical dips on the downslope hinge line of each crossing to prevent diversion in the event that the culvert plugs or its capacity is exceeded. All new culvert installations should not have a diversion potential.

Standard Condition #2. - General comments and recommendations: Upgrade SC #2 and SC #3 by installing new 30-inch and 24-inch diameter culverts, respectively, in line and at grade with the natural channel (See table 4.2). All culverted stream crossings should be maintained regularly by cleaning the inlet, or as specified by California Department of Fish and Wildlife (CDFW) in the approved LSAA, in order to minimize impacts to water quality and aquatic organisms, as required by the Order. Install critical dips on the downslope hingeline of SC #1-3. All culvert installations must comply with installation specifications as required by the Order. Once approved, see PWA's 1600 LSAA agreement with CDFW for additional information on stream crossing treatments.

Obtain all necessary agreements and permits prior to commencing work in any watercourse or at any stream crossing. These may include, but not be limited to: An approved California Department of Fish and Wildlife (CDFW) Lake and Streambed Alteration Agreement (LSAA) 1600, State Water Resources Control Board (SWRCB) 401 Certification, and Army Corps of Engineers (ACOE) 404 Permit.

4.3 Standard Condition #3. Riparian and Wetland Protection and Management

a) For Tier 1 Dischargers, cultivation areas or associated facilities shall not be located within 200 feet of surface waters. While 200 foot buffers are preferred for Tier 2 sites, at a minimum, cultivation areas and associated facilities shall not be located or occur within 100 feet of any Class 1 or 2 watercourse or within 50 feet of any Class 3 water course or wetlands.

Meets condition? No
Observations/Comments: There is one area on the property, near the commercial agricultural building, where perched fill, spent soil, and fuel tanks were located within the 100 foot riparian buffer of a Class II watercourse. Fuel tanks within the riparian buffer have been removed since the initial site inspection by PWA.
Photos: Photos 10-12; MP #6

Corrective or remedial actions needed: Remove all cultivation-related related facilities (fuel tanks, buildings and spoil materials) that are within the 100 foot riparian buffer. Remove (excavate) approximately 210 cubic yards of sidecast fill material from the upper bank of the Class II stream upon approval of the pending 1600 LSAA agreement. Once the fill has been removed, you should implement appropriate BMPs to the spoil disposal site, bare soils areas at the removal site, and all areas that have been disturbed within the 100 foot riparian buffer (re-contour slopes, seed with grass, mulch bare soils with straw, and re-plant with native riparian species) to minimize surface erosion and sediment transport, to revegetate and restore the disturbed riparian areas, and to mitigate any other potential impacts to the riparian buffer zone.

b) *Buffers shall be maintained at natural slope with native vegetation.*

Meets condition? No
Observations/Comments: See 4.3a, above.
Photos: Photos 10-12; MP #6
Corrective or remedial actions needed: See 4.3a, above.

c) *Buffers shall be of sufficient width to filter wastes from runoff discharging from production lands and associated facilities to all wetlands, streams, drainage ditches, or other conveyances.*

Meets condition? No
Observations/Comments: See 4.3a, above.
Photos: Photos 10-12; MP #6
Corrective or remedial actions needed: See 4.3a, above.

d) *Riparian and wetland areas shall be protected in a manner that maintains their essential functions, including temperature and microclimate control, filtration of sediment and other pollutants, nutrient cycling, woody debris recruitment, groundwater recharge, streambank stabilization, and flood peak attenuation and flood water storage.*

Meets condition? No
Observations/Comments: See 4.3.a above
Photos: Photos 10-12; MP #6
Corrective or remedial actions needed: See 4.3a, above.

Standard Condition #3. - General comments and recommendations: Certain cultivation areas and other related facilities on this Project Site do not meet the setback or buffer area requirements to be achieved and maintained under the North Coast Water Quality Control Board's (NCRWQCB) Waiver of Waste Discharge (Order) (see 4.3a, above). However, if you are participating in the County Land Use planning and permitting process, the Humboldt County Planning Department (County) also requires that no infrastructure be moved prior to receiving your cannabis land use permit so as to maintain consistency in the process of evaluating and approving a pending land use applications on file for properties in Humboldt County. Check with the County to determine if you may now move those facilities according to the schedule in Table 1 of this WRPP so as to comply with the requirements of the NCRWQCB Order.

The Schedule of Corrective Actions listed in Table 1 of this WRPP specifies the date by which cultivation areas and related facilities now located within stream buffers should be removed from those riparian buffer areas. That WRPP Table 1 schedule and date of removal should be followed by everyone who is not a part of the County land use planning permit process or who have already received their County land use permit for cannabis cultivation.

If you are applying under County's land use permitting process and have been specifically directed not to remove or move infrastructure, the following interim measures shall be applied until its removal has been approved by the County:

(1) Obtain a written note from the County stating that you are directed not to remove the infrastructure within stream buffer areas on the Project Site; keep that note with your WRPP.

(2) All cultivation waste and spent soils should be removed and stored outside the buffer areas during the winter period as per recommendations included elsewhere in this WRPP.

(3) All petroleum products, fertilizers, and other chemicals that are stored within the buffer area(s) must be moved to proper storage facilities outside stream buffers elsewhere on the Project Site, and as recommended elsewhere in the WRPP.

(4) Use timed or volume limited drip irrigation for all watering of cultivation areas that fall within stream buffer areas.

(5) Minimize soil disturbances and bare earth areas within these cultivation areas; seed and mulch all bare earth prior to October 31 each year.

(6) Maintain native grassy buffers and/or dense riparian vegetation between these cultivation areas and the potential receiving waterbody.

(7) Prior to October 31, planting beds and planting pots containing spent soils or amendments should be either 1) fully tarped or 2) planted with heavy cover crops during the wet season to minimize surface runoff and leaching of nutrients. If cover crops cannot be maintained due to cold weather, the beds/pots should be fully tarped.

(8) Regularly monitor the subject garden area and related facilities to assure the interim measures are effective and adaptively manage the area to minimize or eliminate surface runoff and potential impacts to water quality.

4.4 Standard Condition #4. Spoils Management

a) Spoils shall not be stored or placed in or where they can enter any surface water.

Meets condition? No

Observations/Comments: PWA observed construction-related spoils, such as slash and loose soil, on and around the fill slopes of graded pads during the Project Site inspection. One example is the perched fill where graded material has been sidecast on the north side of CA #1. However, all CAs on the Project Site are located well away from streams, making it unlikely that material would be transported into any watercourse or affect water quality. Additionally, there are two spoils storage areas on the Project Site, one near SC #1, and one near the northern end of Road #3. While these spoils storage areas are located outside of the riparian buffers, leaving little chance of being delivered to surface water, both piles are left uncovered and should be

monitored to ensure they are not being mobilized by the rainfall and runoff. Spoils located within the riparian buffer are addressed in Section 4.3, above. PWA also observed several areas where spent potting soil was also being stored, which is addressed in Sections 4.7 and 4.10, below.
Photos: Photo 13; MP #7
Corrective or remedial actions needed: See corrective actions in Section 4.1a, above. PWA also recommends, where feasible, putting slash back onto fillslopes as a mulch to minimize erosion and sediment transport downslope. If erosion occurs at the spoils storage piles, the piles will need to be covered with tarps, or heavily seeded and mulched, and surrounded by filter fencing or straw waddles installed on the downslope perimeter. Also see Grading Plan for measures to stabilize sidecast materials.

b) *Spoils shall be adequately contained or stabilized to prevent sediment delivery to surface waters.*
Meets condition? No
Observations/Comments: See 4.4a comment, above.
Photos: None
Corrective or remedial actions needed: None

c) *Spoils generated through development or maintenance of roads, driveways, earthen fill pads, or other cleared or filled areas shall not be sidecast in any location where they can enter or be transported to surface waters.*
Meets condition? No
Observations/Comments: See 4.4a comment, above.
Photos: None
Corrective or remedial actions needed: None

4.5 Standard Condition #5. Water Storage and Use

a) *Size and scope of an operation shall be such that the amount of water used shall not adversely impact water quality and/or beneficial uses, including and in consideration with other water use operations, instream flow requirements and/or needs in the watershed, defined at the scale of a HUC 12 watershed or at a smaller hydrologic watershed as determined necessary by the Regional Water Board Executive Officer.*
Meets condition? Unknown
Observations/Comments: The Project Site has a total of 28 rigid plastic water tanks, including nutrient mixing tanks, for a total of 80,475 gallons of tank storage (see Figure 2). Water for irrigation comes from 3 (three) recently installed groundwater wells and the landowner intends to add infrastructure to collect and store rainwater off existing rooftops. While not currently required for groundwater wells, sufficient storage may be required to support irrigation through the dry season from May 15 through October 31 each year, if the wells are determined to be hydrologically connected to surface waters, or the State implements restrictions on groundwater use. A Water budget needs to be refined by water monitoring to determine how much additional storage is necessary. Old, no longer in use wells are to be decommissioned appropriately and abandoned.
Photos: None

Corrective or remedial actions needed: The preliminary water budget described in Section 7.0 of this WRPP should be refined by accurate water monitoring to determine how much addition water storage is needed for dry season irrigation. Under the Order, you are required to monitor (measure), document, and report the water you divert (or pump), store and use throughout the year. PWA has created a simple log sheet to help you monitor this water data for your Project Site (Appendix D). This water data will help you refine the water budget and the data will be reported annually to the NCRWQCB no later than March 31 for the preceding calendar year.

b) *Water conservation measures shall be implemented. Examples include use of rainwater catchment systems or watering plants with a drip irrigation system rather than with a hose or sprinkler system.*

Meets condition? Yes

Observations/Comments: Several water conserving strategies are currently being implemented, these include: 1) timed drip irrigation; 2) controlled hand watering; 3) the use of soil mediums that retain moisture and therefore limit the frequency of irrigation; and 4) irrigation scheduling (watering during the early morning and early evening). There are several other water conservation strategies that can be implemented.

Photos: None

Corrective or remedial actions needed: Additional water conservation measures should be investigated and employed to minimize water diversion and use, including: 1) top mulching beds with straw to limit evaporation; 3) the use of compost and mulch fertilizer to improve soil structure and increase its water-holding capacity; 4) the use of cover crops during rotations and winter to protect and increase soil fertility, and 5) growing plants in-ground (as compared to above-ground pots). You will need to install float shut-off valves on all water storage tanks to eliminate overfilling and spillage. The operator is planning to add additional storage that can be filled through rainwater harvesting off of existing rooftops during the winter season. PWA recommends increasing rainwater harvesting and adding off-stream, rainwater-fed storage facilities, including tanks and/or rainwater-fed, off-stream pond(s), sufficient to meet dry season irrigation needs. Lastly, water conservation measures should continue to be investigated and employed in order to most effectively maximize water use efficiency and reduce groundwater pumping.

c) *For Tier 2 Dischargers, if possible, develop off-stream storage facilities to minimize surface water diversion during low flow periods.*

Meets condition? Yes

Observations/Comments: All existing and planned storage facilities are off-stream (Figure 2). There are no surface water diversions on the Project Site.

Photos: None

Corrective or remedial actions needed: A Water Budget should be refined by accurate water monitoring. You are also required to document exact timing and volumes of water diversion/pumping, storage and use all year long, and especially during the low flow period from May 15 through October 31 each year (see comments below).

d) *Water is applied using no more than agronomic rates.*

Meets condition? Unknown

Observations/Comments: See 4.5a and b comments, above.

Photos: None

Corrective or remedial actions needed: To verify compliance with this Standard Condition, start measuring and recording your water usage using flow meters on a per plant basis, based on type and size of plant pot, full term versus short season (light deprivation) plant, and type of irrigation. Observe and monitor soil moisture so watering, fertilizer and chemical applications are made only when necessary and overwatering and excess infiltration is avoided. This data will help you refine a Water Budget for your operation and verify agronomic rates of watering.

e) *Diversion and/or storage of water from a stream should be conducted pursuant to a valid water right and in compliance with reporting requirements under Water Code section 5101.*

Meets condition? No

Observations/Comments: There are 3 (three) recently installed permitted wells used for cannabis irrigation on the Project Site. The landowner also intends to add infrastructure to collect and store rainwater from existing rooftops. Old, no longer in use wells are to be decommissioned appropriately and abandoned.

Photos: None

Corrective or remedial actions needed: Water diversion and water storage requires valid water rights documentation. As opposed to employing one or more surface water diversions and securing various water rights, consider obtaining irrigation water for your agricultural needs by developing rainwater capture systems to fill rigid water tanks and/or one or more off-stream, rainwater-fed ponds.

Domestic water rights: If you plan to use surface flow diversions (springs or streams) or shallow groundwater for your domestic water needs, you will need to file, obtain, and maintain water rights for your parcel. File an Initial Statement of Diversion and Use (ISDU, see below) and apply for the Small Domestic Use (SDU) appropriation for the stream diversion to cover your domestic use requirements such as drinking, bathing, cooking and fire control. As it currently stands, according to regulatory requirements, this type of water right cannot be used for commercial crop irrigation. Appropriate domestic water rights applications to be filed with the State Water Resources Control Board (SWRCB) include:

- Initial Statement of Diversion and Use (ISDU)
http://www.waterboards.ca.gov/waterrights/water_issues/programs/diversion_use/docs/intl_stmnt_form.pdf

- Small Domestic Use (SDU) Appropriation Registration
http://www.waterboards.ca.gov/waterrights/publications_forms/forms/docs/sdu_registration.pdf

Submit annual water diversion and use volumes to the NCRWQCB by each March 31 for the preceding calendar year, and to the State Water Resources Control Board, Department of Water Rights (SWRCB, DWR) for supplemental reporting required for the Annual Statement of Diversion and Use (ASDU) by June 30 of each year.

Agricultural water rights: The State Water Resources Control Board, Division of Water Rights (SWRCB, DWR) has developed a Small Irrigation Use (SIU) water right registration program for commercial cannabis cultivation. You will need to start this SIU registration in order to receive verification or Notice of Receipt that this water right is not applicable to your Project Site. If you decide you need to use surface flow diversions (springs or streams) or shallow groundwater for your agricultural water needs, you need to file and obtain water rights for your parcel, and PWA recommends that you apply for this Small Irrigation Use water right for cannabis cultivators:

https://www.waterboards.ca.gov/water_issues/programs/cannabis/cannabis_water_rights.shtml

There is an online application portal for this program located at:

https://public2.waterboards.ca.gov/cgo

f) Water storage features, such as ponds, tanks, and other vessels shall be selected, sited, designed, and maintained so as to insure integrity and to prevent release into waters of the state in the event of a containment failure.

Meets condition? Yes
Observations/Comments: All tanks are located on stable slopes away from any streams making it unlikely that water storage structure failures will result in delivery to the stream network
Photos: None
Corrective or remedial actions needed: See general comments below.

Standard Condition #5 - General comments and recommendations: PWA highly recommends, and state agencies may require, that you install flow meters on your surface water diversions, water tanks, and/or on your distribution lines, to accurately document the timing and volume of your water diversion and use. You will need to document the amount of water that is diverted from the streams, pumped from wells, stored in tanks and ponds, and used for irrigation and other purposes through time. PWA has created a simple log sheet to help you monitor your water usage (see Appendix D).

4.6 Standard Condition #6. Irrigation Runoff

a) Implementing water conservation measures, irrigating at agronomic rates, applying fertilizers at agronomic rates and applying chemicals according to the label specifications, and maintaining stable soil and growth media should serve to minimize the amount of runoff and the concentration of chemicals in that water. In the event that irrigation runoff occurs, measures shall be in place to treat/control/contain the runoff to minimize the pollutant loads in the discharge. Irrigation runoff shall be managed so that any entrained constituents, such as fertilizers, fine sediment and suspended organic particles, and other oxygen consuming materials are not discharged to nearby watercourses. Management practices include, but are not limited to, modifications to irrigation systems that reuse tailwater by constructing off-stream retention basins, and active (pumping) and or passive (gravity) tailwater recapture/redistribution systems. Care shall be taken to ensure that

irrigation tailwater is not discharged towards or impounded over unstable features or landslides.

Meets condition? Yes
Observations/Comments: No evidence of irrigation runoff was observed on the Project Site.
Photos: None
Corrective or remedial actions needed: None

Standard Condition #6 - General comments and recommendations: According to the Order, irrigation and fertilization shall occur at agronomic rates and chemicals shall be applied according to the label instructions and specifications. Agronomic rates are those rates of application of water, fertilizers and other amendments that are sufficient for utilization by the crop being grown, but not at a rate that would result in surface runoff or infiltration below the root zone of the crop being grown.

In the event that irrigation runoff occurs or could occur, you shall ensure that contaminated runoff does not enter nearby watercourses. This can be accomplished by constructing or designing containment measures, including sediment basins, berms, infiltration ditches and/or other Best Management Practices (BMPs), as needed, to contain and control surface runoff (see Appendix A).

4.7 Standard Condition #7. Fertilizers and Soil Amendments

a) *Fertilizers, potting soils, compost, and other soils and soil amendments shall be stored in locations and in a manner in which they cannot enter or be transported into surface waters and such that nutrients or other pollutants cannot be leached into groundwater.*

Meets condition? No
Observations/Comments: Fertilizers and amendments, including soil were observed on the ground, uncovered and near petroleum products during the initial site visit. Soil piles, fertilizers and amendments have since been cleaned up and properly stored or covered appropriately with no chance of delivery to surface waters, however in at least one location (the Metal Building #1, near CA #3) fertilizers continued to be stored near petroleum products. PWA also observed several areas where potting soil was being stored improperly, which is addressed in Section 4.10 below.
Photos: Photo 14-16, MP #8-9
Corrective or remedial actions needed: When not being used on the planting beds or in greenhouses, all fertilizers and soil amendments shall be stored fully under cover, off the ground, and in a stable location not exposed to the elements. If stored outdoors, they should be fully tarped in a stable location with no chance of nutrient leaching or delivery to surface waters. Fertilizers, potting soils, compost, and other soils and soil amendments should not be stored with petroleum products as they may be incompatible and could potentially react (see General Comments in Section 4.9 for more information).

b) *Fertilizers and soil amendments shall be applied and used per packaging instructions and/or at proper agronomic rates.*

Meets condition? Unknown

Observations/Comments: Based on verbal communication with the cultivator, the recommended application rates are being followed.
Photos: None
Corrective or remedial actions needed: To confirm compliance with this Standard Condition, you are required to keep detailed records of the type, timing and volume of any fertilizers and/or other soil amendments you use in your operations. They can be recorded on log sheets such as those provided in Appendix E or by using another accurate record keeping method. Observe and monitor soil moisture so watering, fertilizer and chemical applications are made only when necessary and overwatering and excess infiltration or water and nutrients is avoided.

c) *Cultivation areas shall be maintained so as to prevent nutrients from leaving the site during the growing season and post-harvest.*
Meets condition? Yes
Observations/Comments: Soil piles, fertilizers and amendments are properly stored indoors or covered appropriately with no chance of delivery to surface waters.
Photos: Photos 14-15; MP #8
Corrective or remedial actions needed: To prevent nutrient leaching from cultivation areas, either: 1) plant dense cover crops in spent pots, holes and beds to enrich soil and lock up nutrients; 2) fully tarp any exposed soils and growing mediums in beds, pots, holes or piles; or 3) move spent soils and amendments inside or under cover to temporarily store them during the wet season (November 1 – May 15). If dense cover crops cannot be kept alive, all planted areas should be tarped to protect them from rainfall, snowmelt and subsequent infiltration and leaching of nutrients. Winterize all cultivation areas and all other disturbed areas on the Project Site by mulching and seeding prior to each winter period.

Standard Condition #7 - General comments and recommendations: Based on verbal communication with the cultivator, all fertilizers and amendments were reportedly applied according to packaging instructions, and usage is diminished or eliminated toward the end of the growing season.

Under the Order, you are required to keep track of the type, timing and volume of fertilizers and other soil amendments that are applied. This can be done using the simple log form we have provided in Appendix E.

4.8 Standard Condition #8. Pesticides/Herbicides

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

products on the site shall be placed, used, and stored in a manner that ensures that they will not enter or be released into surface or ground waters.

Meets condition? Yes

Observations/Comments: Pesticides and herbicides were not observed at the time of the site inspection.

Photos: None

Corrective or remedial actions needed: All pesticides, herbicides and related materials (e.g., fungicides) must be used and applied consistent with product labeling. When present, these chemicals should be stored within enclosed buildings in such a way they cannot enter or be released into surface or ground waters and should not be stored with petroleum products as they may be incompatible and could potentially react (see General Comments in Section 4.9 for more information). Pesticide and herbicide storage and use on the Project Site must be closely monitored and recorded.

Standard Condition #8 - General comments and recommendations: When present, pesticides and herbicides should be stored within enclosed buildings in such a way they cannot enter or be released into surface or ground waters.

For the health of the environment and your workers, you are encouraged to utilize organic or biologic controls, rather than highly toxic petro-chemicals, to prevent pest and mildew problems. Several safe alternatives are available. Please ask about our cultivators BMP handbook.

Under the Order you are required to keep records (logs) of the type, timing and volume of pesticides and herbicides used in your operations. This can be done using a simple log form, such as the one included in Appendix F. Additionally, for any pesticide use you must comply with any Pesticide Registration Requirements. See Appendix E2 included in the NCRWQCB Order, or on their web site at:
http://www.waterboards.ca.gov/northcoast/board_decisions/adopted_orders/pdf/2015/150728_Appendix_E2_DPR_MJ%20Pesticide%20Handout.pdf

4.9 Standard Condition #9. Petroleum Products and other Chemicals

a) *Petroleum products and other liquid chemicals, including but not limited to diesel, biodiesel, gasoline, and oils shall be stored so as to prevent their spillage, discharge, or seepage into receiving waters. Storage tanks and containers must be of suitable material and construction to be compatible with the substance(s) stored and conditions of storage such as pressure and temperature.*

Meets condition? No

Observations/Comments: There are several general locations on the Project Site, in CA #1, CA #3, near the commercial Ag building and near some water storage tanks, where improper petroleum product storage was identified. Two (2) 2,000 gallon diesel tanks had secondary containment but lacked adequate cover to protect them from precipitation. Numerous large and small generators and pumps were observed throughout the property lacking secondary containment and/or cover, as well as several 55 gallon oil drums, smaller fuel cans and oil containers. The Metal Building #1 near CA #3 contained both petroleum products and fertilizers/nutrients. There were also

several large propane tanks on the Project Site. The landowner has submitted a SPCC Plan and a HMBP (see general comments below) and has also obtained an EPA number for their operations: CAC002918671.
Photos: Photos 16-20; MP #10
Corrective or remedial actions needed: Place all small fuel cans, generators, diesel tanks, gasoline powered garden equipment and any other items containing petroleum products in adequate secondary containment basins and store in a safe, secure location (e.g. away from slopes and outside of riparian buffers) out of the elements. All petroleum products and other liquid chemicals onsite must be stored under cover and off the ground and in a secondary containment basin (tote, tub, impermeable basin/floor, etc.) capable of containing the entire stored volume. Although not required by the Order, PWA recommends placing a sign on any empty fuel tank or generator not in use with the current date that reads "Empty, not in use." In addition, more information on handling and storing hazardous materials is provided in the General Comments and Recommendations, below.

b) *Above ground storage tanks and containers shall be provided with a secondary means of containment for the entire capacity of the largest single container and sufficient freeboard to contain precipitation.*
Meets condition? No
Observations/Comments: See 4.9a comment, above.
Photos: Photos 16-20; MP #10
Corrective or remedial actions needed: See 4.9a corrective action, above.

c) *Dischargers shall ensure that diked areas are sufficiently impervious to contain discharged chemicals.*
Meets condition? N/A
Observations/Comments: No diked areas were observed on the Project Site
Photos: None
Corrective or remedial actions needed: None

d) *Discharger(s) shall implement spill prevention, control, and countermeasures (SPCC) and have appropriate cleanup materials available onsite.*
Meets condition? Yes
Observations/Comments: Several spill prevention cleanup kits are kept onsite to help clean up small spills. Spill kits should be located where fuel is stored and where refueling occurs.
Photos: None
Corrective or remedial actions needed: None

e) *Underground storage tanks 110 gallons and larger shall be registered with the appropriate County Health Department and comply with State and local requirements for leak detection, spill overflow, corrosion protection, and insurance coverage.*
Meets condition? N/A
Observations/Comments: No underground storage tanks were observed on the Project Site.
Photos: None

Corrective or remedial actions needed: None

Standard Condition #9 - General comments and recommendations: Note that when petroleum products are onsite they will need to be stored under cover, off the ground and in a secondary containment basin (tote, tub, impermeable floor/basin, etc.).

Proper storage of hazardous materials: Proper storage of hazardous materials (e.g., flammable liquids or gasses, many agricultural chemicals, oxidizers, acids, caustic substances) is essential for maintaining safe operations and for protection of the environment. Commercial operations that store hazardous materials are required to prepare a hazardous materials business plan (HMBP) and maintain Material Safety Data Sheets (MSDS) for each hazardous chemical that they store or use. County health agencies may require HMBPs to be submitted for their review. The HMBP information must be communicated to employees annually and be kept in a location that is readily accessible by employees. MSDSs explain how to medically treat a person that has been exposed to a hazardous substance and how to safely cleanup a spill.

Hazardous liquids and chemical storage - Generally, incompatible hazardous materials must be stored in separate locations, with distinct secondary containment vessels for each type of material. Secondary containment is required for hazardous liquids and must be sized to contain a spill volume equivalent to the largest hazardous material container or 10% of the total volume, whichever is greater. Flammable and combustible hazardous materials must be separated from oxidizers by a distance of no less than 20 feet. The following guidelines should be followed when handling and storing hazardous materials.

Always label containers with the substance inside for both hazardous and non-hazardous materials. For flammable hazardous materials, make certain that an appropriate fire extinguisher is available nearby the storage area. Dry powder fire extinguishers are the most versatile. Water filled fire extinguishers should not be used on certain types of hazardous material fires (e.g. water-reactive metals, strong acids, petroleum).

- Acids (e.g. hydrochloric acid, pool cleaner, citric acid) must be segregated from:
  - ✓ Reactive metals such as sodium, potassium, magnesium, etc.
  - ✓ Flammable and combustible materials.
  - ✓ Chemicals which could generate toxic or flammable fumes when mixed.
  - ✓ Bases.

- Bases (e.g., Portland cement, lime, lye, or drain cleaner) must be segregated from:
  - ✓ Acids, metals, organic peroxides and flammable liquids, and other easily ignitable materials.
  - ✓ Solvents
  - ✓ Oxidizing acids and oxidizers.

- Oxidizers (e.g. Ammonium nitrate, ammonium phosphate, oxygen gas cylinders) must be segregated from:
  - ✓ Combustible and flammable liquids and gasses (e.g. petroleum, acetylene cylinders, solvents) with at least 20 feet of separation.
  - ✓ Reducing agents such as zinc, alkali metals, and formic acid.

- Flammable materials (e.g., gasoline, fuses, gunpowder, acetylene cylinders) must be segregated from:
  - ✓ Oxidizers, caustic materials, acids, and bases.

It is good housekeeping practice to store compatible hazardous materials exclusively away from agricultural chemicals. Although uncommon, even some organic agricultural amendments may be reactive, caustic, ignitable, or corrosive. Segregation of hazardous materials from non-hazardous materials eliminates the potential for cross-contamination of agricultural amendments and exposure of workers to hazardous fumes or residues.

Finally, the Order requires that Petroleum Storage Spill Prevention, Control and Countermeasures (SPCC) be implemented for the site (see the CA-EPA fact sheet: http://www.rivcoeh.org/Portals/0/documents/guidance/hazmat/FactSheetSPCC.pdf).

4.10 Standard Condition #10. Cultivation-Related Wastes

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

Meets condition? No

Observations/Comments: There are no less than four (4) locations on the Project Site where cultivation waste, such as spent soil, old soil bags, tarp/plastic waste, and spent plant material, was observed to be a threat to water quality (either surface waters or ground waters, or both).

Photos: Photos 21-25; MP #11

Corrective or remedial actions needed: Maintain good housekeeping by cleaning up cultivation related wastes around the property. Spent soil and plant material (root balls, stalks, etc.), old soil bags, and plastic wastes should be appropriately disposed of or covered before the rainy season in order to stop them from being transported to surface waters and to prevent nutrients from leaching into the groundwater. Remove and store indoors, or tarp or otherwise cover, all spent soil in piles, pots or planting beds during the wet season to prevent soil and nutrients from being transported to surface waters or leaching nutrients into the groundwater. Alternately, spent soils may be heavily cover cropped to tie up nutrients during the wet season, but if the dense cover crop cannot be maintained due to cold weather or snow, then the soil materials must be tarped and fully protected from the weather. Also see general comments below.

Standard Condition #10 - General comments and recommendations: We encourage you to chip or shred your plant stalks and compost them after harvest, or dispose of the spent plant material at an appropriate disposal facility. Any additional cultivation-related waste can be easily contained by keeping soils and garbage greater than 200 feet from drainage areas and on gentle slopes, tarping or otherwise covering soil piles, and/or by placing straw waddles or other containment structures around the perimeter of spoil piles.

Organic cultivation-related waste should be recycled if possible, and inorganic wastes and garbage should be removed from the property on a regular basis and disposed of at an appropriate facility.

4.11 Standard Condition #11. Refuse and Human Waste

a) *Disposal of domestic sewage shall meet applicable County health standards, local agency management plans and ordinances, and/or the Regional Water Board's Onsite Wastewater Treatment System (OWTS) policy, and shall not represent a threat to surface water or groundwater.*

Meets condition? No
Observations/Comments: There is one unpermitted Onsite Wastewater Treatment Systems (OWTS) and one outhouse on the Project site (see Figure 2). The landowner is currently working with PWA to site/design/install an appropriate and permitted septic system.
Photos: Photo 26; MP #12
Corrective or remedial actions needed: The Order requires one or more county-approved (permitted) OWTS on each Project Site. Proof of permitting through the Humboldt County Division of Environmental Health (HCDEH) is required. The new wastewater treatment system(s) must be designed to serve the number of residents and workers that will occur at the Project Site when your cultivation-related operations are at their peak.

Refer to the Humboldt County Division of Environmental Health regarding the proper steps or permits to decommission the in-use outhouse. Unless otherwise directed, decommission the outhouse by first having the pit pumped (if feasible), then filling the pit with clean soil, and removing the above ground structure so they cannot be used.

Utilize one or more serviced portable toilets (or other county approved systems) until the new OWTS can be designed, constructed and permitted. Maintain servicing records for these portable toilets for possible inspection. If the HCDEH provides written approval (attach that written approval to the WRPP), you may continue to use your existing, unpermitted systems until the new system(s) are designed, permitted and constructed.

b) *Refuse and garbage shall be stored in a location and manner that prevents its discharge to receiving waters and prevents any leachate or contact water from entering or percolating to receiving waters.*

Meets condition? No
Observations/Comments: Refuse and garbage was observed on the property, mostly stored in sheds and in bags outside.
Photos: None
Corrective or remedial actions needed: Maintain good housekeeping by collecting and cleaning up all trash on the property; this includes general household trash, old building waste and the underground shed. Ensure that all cultivation waste is removed and properly stored or disposed of (See section 4.10). All garbage and refuse generated onsite should be stored in lidded cans, or some other appropriate covered receptacle, that are placed in secure locations. It is important to utilize storage facilities which

prevent animals from accessing or disturbing garbage or refuse, and rainfall from leaching wastes onto and into the ground. You will need to dispose of existing garbage and refuse in a timely manner at an approved waste disposal facility. PWA recommends that you remove trailer home(s) that are no longer in use on the property as soon as possible, and dispose of the debris at an approved facility.

c) *Garbage and refuse shall be disposed of at an appropriate waste disposal location.*
Meets condition? Yes
Observations/Comments: According to the operator, the garbage and refuse generated onsite is disposed of at an appropriate waste disposal location, however it appears that trash is been taken offsite infrequently.
Photos: None
Corrective or remedial actions needed: PWA recommends that you dispose of existing garbage and refuse in a timely manner at an approved waste disposal facility and continue to periodically dispose of new waste material properly as it is generated.

Standard Condition #11 - General comments and recommendations: None

4.12 Standard Condition #12. Remediation/Cleanup/Restoration

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

Appendix A accompanying the NCRWQCB Order, (and Appendix A in your WRPP), *includes environmental protection and mitigation measures that apply to cleanup activities such as: temporal limitations on construction; limitations on earthmoving and construction equipment; guidelines for removal of plants and revegetation; conditions for erosion control, limitations on work in streams, riparian and wetland areas; and other measures.*

These protection and mitigation measures have been developed to prevent or reduce the environmental impacts and represent minimum, enforceable standards by which cleanup activities shall be conducted under this Order.

Meets condition? Yes
Observations/Comments: See general comments below.
Photos: None
Corrective or remedial actions needed: None

Standard Condition #12 - General comments and recommendations: No major site remediation or clean-up work that otherwise threatened water quality was identified at the Project Site. All corrective and remedial actions needed to satisfy the other 11 Standard Conditions have been outlined above.

5.0 PRIORITIZED CORRECTIVE ACTIONS AND SCHEDULE TO REACH FULL COMPLIANCE

The following check list should be followed to become fully compliant with the Order. Please see the detailed comments and recommendations above for a more complete description of the problems and the needed corrective actions and monitoring requirements.

Standard Condition Requiring Action		Treatment Priority	Schedule	Summary of Corrective Actions/Recommendations (see more detailed listing of corrective actions in Section 4, above)	Monitoring Point and Photo	Date Completed
1 – Site Maintenance, Erosion Control and Drainage Features	1a, b, d	Moderate	Oct.15, 2019	- Install permanent road drainage structures which drain the road surface (rolling dips) and the ditch (ditch relief culverts) on the immediate approaches to all stream crossings to hydrologically disconnect road segments and ditches from surface waters. See Figures 1 and 2 for approximate locations. PWA will work with you to identify and flag the specific locations immediately prior to equipment work. - Install a rocked Type 1 rolling dip at the cutbank spring on Road #4 to convey flow across the road - Maintain the roadside ditch and existing DRCs as necessary to ensure proper drainage and to disperse runoff onto the native hillslope.	MP #1; Photo 1	
	1a	Moderate	Oct. 15, 2019	- Under the Order, all legacy roads on the Project Site are required to be inventoried and assessed for erosion sources and threats to water quality.		
	1a	Moderate	Oct. 15, 2019	- If existing or potential legacy sediment sources that could impact surface waters are identified on legacy roads, they will need to be treated using erosion prevention and erosion control treatments (see Appendix A and as prescribed by field assessment staff).		
	1c	High	Oct. 15, 2019	- Apply appropriate BMPs to all disturbed and bare soil areas (e.g., recontouring slopes, seeding with grass, mulching with straw and re-planting as necessary) to minimize surface erosion. - Also see the property Grading Plan for detailed correction actions to minimize surface erosion and sediment delivery, and to mitigate any other potential impacts to water quality at the graded pads.	MP #2; Photos 2-3	
2 – Stream Crossing Maintenance	2a, b, c, d, e	High	Oct.15, 2019	- Upgrade SC #2 by installing a new 30-inch diameter culvert, in line and at grade with the natural channel. - Upgrade SC #3 by installing a new 24-inch diameter culvert, in line and at grade with the natural channel. - All culverts should be maintained regularly by cleaning the inlet of debris prior to each winter and after each winter storm. - Install critical dips on the downslope (down road) hingeline of SC #1-3.	MP #3-5; Photos 4-9	

Standard Condition Requiring Action		Treatment Priority	Schedule	Summary of Corrective Actions/Recommendations (see more detailed listing of corrective actions in Section 4, above)	Monitoring Point and Photo	Date Completed
				- Once approved, see PWA's 1600 LSA Agreement with CDFW for additional information and other requirements for stream crossing treatments and specifications. - Obtain all necessary permits prior to commencing work on the steam crossings. Permits may include, and may not be limited to: SWRCB 401 Certification, ACOE 404 Permit and CDFW 1600 (LSAA).		
3 – Riparian and Wetland Protection and Management	3a-d	Moderate-High	Oct. 15, 2019 or as allowed by Humboldt County under the land use permit process	**NOTE:** *Before you remove or move cultivation areas and/or associated facilities, as listed below, you should read* ***Section 4.3 – General Comments and recommendations****, above. If you are applying for a County Land Use permit for commercial cultivation, the date at which these must be moved out of the buffer zone may be temporarily postponed and other temporary treatments maybe required until you receive your County land use permit for cannabis cultivation. Until then, temporary measures should be implemented, as described in Section 4.3, above.* - Remove (excavate) the 210 cubic yards of sidecast fill material from the upper bank of the Class II stream, upon approval of the 1600 LSAA agreement with CDFW. - Spent soil, fuel tanks and other related facilities and structures within the 100 foot riparian buffer will need to be moved out of the buffer. - Once these facilities are removed, you should implement appropriate BMPs (re-contour slopes, seed with grass, mulch with straw, and re-plant with native riparian species) to control erosion on any disturbed or bare soil areas and to restore riparian function. - Also see the property Grading Plan for detailed correction actions to minimize surface erosion and sediment delivery, and to mitigate any other potential impacts to water quality at the graded pads within the riparian area.	MP #6; Photos 10-12	
4 – Spoils Management	4a	Moderate - High	Oct. 15, 2019; concurrent with the above treatments	- Once the spoil is excavated and removed, bare soil areas should be seeded, mulched with straw, and covered with locally derived slash to minimize erosion and sediment transport downslope. - If erosion occurs at the spoils storage piles, the piles will need to be covered with tarps, or heavily seeded and mulched with straw, and surrounded by filter fencing or straw waddles installed on the downslope perimeter. -. Also see the property Grading Plan for measures to stabilize sidecast materials.	MP # 7; Photo 13	
5 – Water Use	5a, c	High		- Develop/refine a Water Budget for the Project Site to determine water needs and required storage volumes needed irrigation during the entire dry season from May 15th - October 31st.		

Standard Condition Requiring Action		Treatment Priority	Schedule	Summary of Corrective Actions/Recommendations (see more detailed listing of corrective actions in Section 4, above)	Monitoring Point and Photo	Date Completed
			On or before April. 1, 2019 and continuing	- Under the Order, you are required to measure, document and report the water you divert (or pump), store and use throughout the year. Use the simple log sheet provided in Appendix D. - Report water data annually to the NCRWQCB no later than March 31 for the preceding calendar year - PWA highly recommends, and state agencies may require, that you install flow meters on your well, and on water tanks and distribution lines, to accurately document the timing and volume of the water you pump and use.		
	5b	Moderate	On or before Oct. 15, 2019 and continuing	- Employ and test other water conservation techniques, including 1) top mulching beds with straw to limit evaporation; 3) the use of compost and mulch fertilizer to improve soil structure and increase its water-holding capacity; 4) the use of cover crops during rotations and winter to protect and increase soil fertility, and 5) growing plants in-ground (as compared to above-ground pots) - Install float shut-off valves on all storage tanks to eliminate overfilling. - Investigate the feasibility of adding sufficient additional rainwater-fed collection and storage to meet your dry season irrigation needs.		
	5b, f	High-Moderate	Oct. 15, 2020	PWA recommends increasing rainwater harvesting and adding off-stream, rainwater-fed storage facilities, including tanks and/or rainwater-fed, off-stream pond(s), sufficient to meet dry season irrigation needs		
	5d	Moderate	On or before April 1, 2019 and continuing	- To verify compliance with this Standard Condition, start measuring and recording your water usage using flow meters on a per plant basis, based on type and size of plant pot, full term versus short season (light deprivation) plant, and type of irrigation. - Observe and monitor soil moisture so watering, fertilizer and chemical applications are made only when necessary and overwatering and excess infiltration is avoided.		
	5e	High	Wells in by June 30, 2019 LSAA by April 1, 2019	- Continue the process of installing and permitting two (2) additional wells for irrigation with Humboldt County, and adding infrastructure to collect and store rainwater off existing rooftops. - Obtain a consultation with California Department of Fish and Wildlife (CDFW) staff and file a CDFW Lake and Streambed Alteration Agreement (LSAA) for you stream crossings. They will also want to observe your groundwater well(s) and the drilling logs.		
7 – Fertilizers and Soil Amendments	7a	Moderate	Oct. 15, 2019 and annually	- During the wet season, all used or unused amendments, potting soils, compost and fertilizers located anywhere on the Project Site should be stored under a roof and off the ground, or tarped in a	MP #8-9; Photo 14-16	

Standard Condition Requiring Action		Treatment Priority	Schedule	Summary of Corrective Actions/Recommendations (see more detailed listing of corrective actions in Section 4, above)	Monitoring Point and Photo	Date Completed
				stable location with no chance of nutrient leaching or delivery to surface waters. - Store all hazardous materials of differing type (e.g. petroleum products vs. agricultural chemicals) in separate locations (see General Comments in Section 4.9 for more information)		
	7b	High	On or before April 1, 2019 and continuing	- Under the Order, you are required to keep track of the type, timing and volume of fertilizers and other soil amendments that are applied. This can be done using the simple log form we have provided in Appendix E. - Observe and monitor soil moisture so watering, fertilizer and chemical applications are made only when necessary and overwatering and excess infiltration is avoided.		
	7c	Moderate-High	Oct. 15, 2019 and continuing	- To prevent nutrient leaching from cultivation areas, either: **1)** move spent soils and amendments inside or under cover to temporarily store them during the wet season (November 1 – May 15), **2)** fully tarp any exposed soils and growing mediums in beds, pots, holes or piles; or **3)** plant dense cover crops in spent pots, holes and beds to enrich soil and lock up nutrients. - If dense cover crops cannot be kept alive, all planted areas should be tarped to protect them from rainfall, snowmelt and subsequent infiltration and leaching of nutrients. - Winterize all cultivation areas and all other disturbed and bare soil areas on the Project Site by mulching and seeding prior to each winter period.		
8 – Pesticides/ Herbicides	8a	High	On or before April 1, 2019 and continuing	- Under the Order you are required to keep records (logs) of the type, timing and volume of pesticides, herbicides and fungicides used in your operations. This can be done using a simple log form, such as the one included in Appendix F. - All pesticides, herbicides and related materials (e.g., fungicides) must be used and applied consistent with product labeling. - When present, these chemicals should be stored within enclosed buildings in such a way they cannot enter or be released into surface or ground waters.		
9 – Petroleum Products and Other Chemicals	9a, b, d	High	Oct. 15, 2019 and then annually	- Place all small fuel cans, generators, diesel tanks, gasoline powered garden equipment and any other items containing petroleum products under cover, off the ground and in a secondary containment basin (tote, tub, impermeable floor/basin, etc.). - Store all hazardous materials of differing type (e.g. petroleum products vs. agricultural chemicals) in separate locations (see General Comments in Section 4.9 for more information). - Spill kits should be located where fuel is stored and where refueling occurs.	MP #10; Photos 17-20	

Standard Condition Requiring Action		Treatment Priority	Schedule	Summary of Corrective Actions/Recommendations (see more detailed listing of corrective actions in Section 4, above)	Monitoring Point and Photo	Date Completed
10 – Cultivation-Related Wastes	10a, b, d	Moderate-High	Dec. 15, 2018 and then annually	- Cultivation wastes on the Project Site, including plant stalks, root balls, old soil bags, plastic wastes, soil piles and spent soils in uncovered pots, grow beds or piles and elsewhere, need to be: 1) fully tarped or otherwise covered during the wet season to prevent nutrient leaching, or 2) removed at the end of the growing season and stored indoors or undercover during the off-season. - Alternately, spent soils in beds and pots may be heavily cover cropped during the wet season, but if a dense cover crop cannot be maintained due to cold weather or snow, then the soil materials must be tarped and fully protected from the weather.	MP #11; Photos 21-25	
11- Refuse and Human Waste	11a	High	Permitted OWTS by Dec. 31, 2018 Outhouse removal and treatment by Dec. 31, 2018	- The Order requires a County permitted or approved OWTS. Proof of permitting is required and should be kept on site with this WRPP. - Continue to work with PWA to conduct wet weather testing and onsite investigations to design and install one or more newly permitted OWTS. - The permitted system(s) must be designed to serve the number of residents and workers that will occur at the Project Site when your operations are at their peak. - If the HCDEH provides written approval (attach that written approval to the WRPP), you may continue to use your existing, unpermitted system until the new system(s) are designed, permitted and constructed. Otherwise, you should utilize one or more serviced portable toilets for use by residents, staff and visitors until the new OWTS can be designed, constructed and permitted. - Maintain servicing records for these portable toilets for possible inspection. - Refer to the Humboldt County Health Division regarding the proper steps or permits to decommission in use outhouse. Unless otherwise directed, decommission the outhouse by first having the pit pumped (if feasible), then filling the pit with clean soil, and removing the above ground structure so they cannot be used.	MP #12; Photo 26	
	11b	Moderate-Low	On or before Dec. 15, 2018 and continuing	- Collect all trash on the property, including general household trash, old building waste and the underground shed. Ensure that all cultivation waste is removed and properly stored or disposed of (See section 4.10). - All garbage and refuse generated onsite should be stored in lidded cans, or some other appropriate receptacles, that are placed in a secure location and regularly disposed of at an approved facility. - It is recommended that you remove trailer home(s) no longer in use on the property and dispose of the debris at an approved facility.		

6.0 MONITORING AND INSPECTION PLAN

Under the Order, sites are required to be monitored and inspected periodically to ensure conformance with the 12 Standard Conditions. In most cases, inspections and records of inspections identify conditions that have been corrected and are now in compliance; conditions that remain in compliance; and conditions that have changed and may no longer be in compliance with the Order. An inspection and monitoring plan is used to document these conditions, identify problems and make corrections using best management practices (BMPs) to protect water quality (Appendix A).

Monitoring Plan – Please refer to Appendix B and Figure 2 to review the monitoring plan and specific monitoring points for which you are responsible.

Monitoring guidelines and reporting standards have been created by the NCRWQCB as part of the Order. Monitoring of the Project Site includes visual inspection and photographic documentation of each feature of interest listed on the Project Site map, with new photographic documentation recorded with any notable changes to the feature of interest.

Site inspection schedule - According to the NCRWQCB, periodic inspections should include visual inspection of the site, including any management measures/practices, to ensure they are being implemented correctly and are functioning as expected. Inspections include photographic documentation of any controllable sediment discharge sites, as identified on the site map, and a visual inspection of those locations on the site where pollutants or wastes, if uncontained, could be transported into receiving waters, and those locations where runoff from roads or developed areas drains into or towards surface water.

At a minimum, sites shall be inspected at the following times to ensure timely identification of changed site conditions and to determine whether implementation of additional management measures is necessary to prevent or minimize discharges of waste or pollutants to surface water:

1) Before and after any significant alteration or upgrade to a given stream crossing, road segment, or other controllable sediment discharge site. Inspection should include photographic documentation, with photo records to be kept onsite.
2) Prior to October 15th to evaluate site preparedness for storm events and stormwater runoff.
3) Following the accumulation of 3 inches cumulative precipitation (starting September 1st) or by December 15th, whichever is sooner.
4) Following any rainfall event with an intensity of 3 inches precipitation in 24 hours. Precipitation data can be obtained from the National Weather Service by entering the site zip code at http://www.srh.noaa.gov/forecast; Pick the nearest or most relevant zip code and then select the 3 day history that will also show precipitation totals.

Inspection and Monitoring Checklist – Appendix B contains a checklist data form that will be used by the landowner and/or operator to: 1) document inspection dates, 2) document visual and photographic inspection results, 3) describe remediation and management measures that are being applied, 4) identify new problems and their treatments, and 5) document the progress and effectiveness of implementing remedial and corrective measures that are needed to meet the 12 Standard Conditions, as outlined in this WRPP. Appendix C contains photo documentation of your monitoring points and will need to be updated as corrective treatments are implemented and treatments are monitored and evaluated over time.

Annual Reporting – An Annual Report is to be submitted directly to the NCRWQCB or to PWA (through our 3rd Party Program). The information in the annual reporting form must be submitted by March 31st of each year. The reported information is to be reflective of current site conditions, and includes monitoring data and tasks accomplished to protect water quality. Among other things, the report includes such items as the reporting of monthly monitoring data collected during the year (e.g., chemical use, water diversions, water storage, water use, etc.), management measures (BMPs) applied during the year and their effectiveness, and tasks accomplished during the year towards meeting each of the 12 Standard Conditions identified as deficient in this WRPP.

7.0 WATER USE PLAN

Requirements - According to the Order, a Water Use Plan (WUP) shall record water source, relevant water right documentation, and amount used monthly. All water sources shall be recorded, including alternative sources such as rain catchment and groundwater, and/or hauled water. Other elements of the WUP will include:

- Developing a Water Budget for determining the timing and volume of actual water use on the site. Water related data will be summarized monthly for the preceding month.
- Designing and implementing water conservation measures to reduce water diversion and water use.
- Calculating water storage requirements needed to support cultivation activities during the dry season, and implementing those required storage measures.

The Water Use Plan must also describe water conservation measures and document your approach to ensure that the quantity and timing of water use is not impacting water quality objectives and beneficial uses (including cumulative impacts based on other operations using water in the same watershed). Water use will only be presumed to not adversely impact water quality under one of the following scenarios:

- No surface water diversions occur from May 15th to October 31st.
- Water diversions are made pursuant to a local plan that is protective of instream beneficial uses.
- Other options that may affect water quality: (e.g., percent of flow present in stream; minimum allowable riffle depth; streamflow gage at bottom of Class I stream; AB2121 equations; CDFW instream flow recommendations; promulgated flow objective in Basin Plan; etc.).

Site Water Use Plan -The record of activities, accomplishments and water monitoring results for the Water Use Plan for this site will be logged and recorded in data tables and site records (data forms) included in Appendix D of this WRPP. These will be tracked and kept up-to-date by the landowner or cultivator of the site.

Water Storage and Forbearance – The ultimate goal of the enrollee is to accumulate enough water storage capacity to forebear (not divert or pump surface waters) the entire period from May 15 to October 31. This will ensure the timing of water use is not impacting water quality objectives and beneficial uses. While not required, it is also preferential to not draw down or deplete local ground water by excessive groundwater pumping during the dry season. There is 80,475 gallons of water

storage in tanks currently on the Project Site. While not required, based on the total size of the currently in use cultivation areas (37,760 ft^2), there may be sufficient water storage to avoid groundwater pumping during the dry season from May 15 through October 31. The preliminary Water Budget will need to be refined by accurate water monitoring to determine how much additional storage is needed for you to minimize or avoid groundwater pumping during the dry season.

Water Conservation - Water conservation measures currently practiced include the use of a timed drip irrigation system and controlled hand watering. We suggest growing plants in-ground (as compared to above-ground pots) and watering late in the afternoon or evening to minimize water loss through evaporation and maximize water up-take by the plants. Additional water conservation measures to test and evaluate are listed in Section 4.5b, above. Starting this year, new water conserving techniques and equipment will be utilized and tested to evaluate their effectiveness and efficiency. You will also need to install float shut-off valves on all water storage tanks to eliminate overfilling and spillage. Water conservation measures should continue to be investigated and employed in order to most effectively maximize water use efficiency and reduce or eliminate dry season diversions.

Water sources and use - Several Class III watercourses are located within the Project Site parcels. The water used for irrigation activities comes from three newly installed groundwater wells identified in Figure 2. The operator is planning to add additional storage that can be filled through rainwater harvesting off of existing rooftops during the winter season. While not required, PWA recommends increasing rainwater harvesting and adding off-stream, rainwater-fed storage facilities, including tanks and/or rainwater-fed, off-stream pond(s), sufficient to meet dry season irrigation needs so as to minimize groundwater pumping during the summer dry season. If new ponds are approved and constructed, they should be designed to be off-stream and completely rainwater-fed so your operations will have no significant impact on downstream water quality and aquatic habitat, especially during the dry summer months.

Based on CDFW estimates of cannabis irrigation, and the landowner's irrigation practice of watering every other day, during the main growing season, the operator has estimated total water use for irrigation of all proposed cultivation areas at ~567,000 gallons (77 watering days x 43,560 sq. ft. x (1.4/10 sq. ft.)). The landowner anticipates using approximately 153,450 gallons of water for irrigation for mixed light cultivation during the growing season (93 watering days x 22,000 sq. ft. x .75 gallons/10 sq. ft.). The landowner also anticipates using approximately 4,500 gallons of water to vegetate plants for outdoor mixed light growth for a total estimated water use of 725,000 gallons. Alternately, using cannabis irrigation estimates employed by Humboldt County (estimated at approximately 10 gal/ft^2/year), a 37,760 ft^2 cultivation area would require an estimated 377,600 gallons of water storage for annual irrigation needs, not including water used for domestic and other purposes. Currently, using either irrigation estimate above, water storage capacity of 80,500 gallons in rigid tanks is far short of the estimated water needed for cannabis irrigation during the annual forbearance period from May 15 through October 31.

Make sure to keep accurate records of your water diversion, storage and use so that it can be reported each year, as required by the NCRWQCB and SWRCB-DWR. Make sure you are using water meters on your water well pump(s), and that you also have meters on your main distribution lines from tanks and any other storage facilities to your areas of use (cultivation areas). The more

frequently and accurately water use is recorded, the better you will understand the water uses and needs of your farm, the value of water conservation, and the volume of water storage that is needed for you to minimize or eliminate well pumping during the dry summer growing season.

Annual reporting of diversion and use rates are required to be submitted annually by each March 31 to the NCRWQCB, to cover water data for the preceding calendar year. As more accurate data is gathered, refined targets can be made to ensure adequate storage exists to protect downstream water quality and beneficial uses during the driest time of the year.

8.0 LIST OF CHEMICALS

The WRPP must contain a list of chemicals being stored onsite, in addition to quantities used and frequency of application. These include fertilizers/soil amendments, pesticides, herbicides, fungicides, petroleum products and other chemicals used in, or associated with, your cultivation activities and related operations.

Because this is the first year of enrollment, information regarding chemical use and storage is deficient or anecdotal. Appendixes E and F contain monitoring forms that should be used to list the chemical inventory record over time, as supplies are added to the site and used during the growing season. The landowner or operator will use these forms to track the types, storage volumes, timing of application, and volume of use of these products throughout the year. The initial chemicals and amendment list that may be used and stored onsite include:

Fertilizers and amendments:
Cutting Edge – Bloom
Cutting Edge – Plant Amp
Cutting Edge – Uncle John's Blend
Cutting Edge – Sugaree
Cutting Edge – Mag-Amped CA, K

Pesticides, Herbicides, and Fungicides:

_____

_____

_____

Petroleum and Other Chemicals:
Gasoline
Diesel
Motor oil
Propane

9.0 LANDOWNER/LESSEE CERTIFICATION/SIGNATURES

This Water Resource Protection Plan (WRPP) has been prepared by Pacific Watershed Associates, an approved Third Party Program acting on behalf of the North Coast Regional Water Quality Control Board (NCRWQCB).

"I have read and understand this WRPP, including Section 2.0 – Certifications, Conditions and Limitations. I agree to comply with the requirements of the California Regional Water Quality Control Board North Coast Region Order No. 2015-0023 (Waiver of Waste Discharge Requirements and General Water Quality Certification for Discharges of Waste Resulting from Cannabis Cultivation and Associated Activities or Operations with Similar Environmental Effects in the North Coast Region), including the recommendations and actions listed in this WRPP."

Name of Legally Responsible Person (LRP): _____

Title (owner, lessee, operator, etc.): Owner

Signature: _____ Date: _____

WRPP prepared by (if different from LRP): **Pacific Watershed Associates, Inc.**

WRPP prepared and finalized on (date): _____

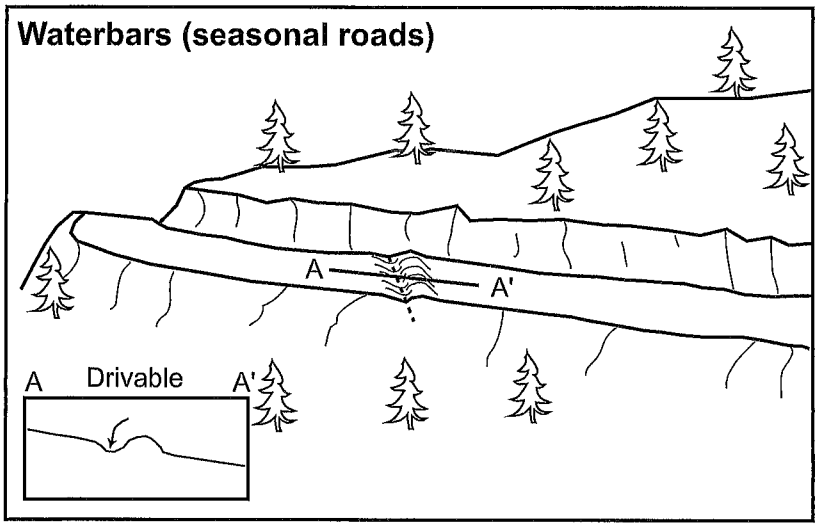
Signature: _____

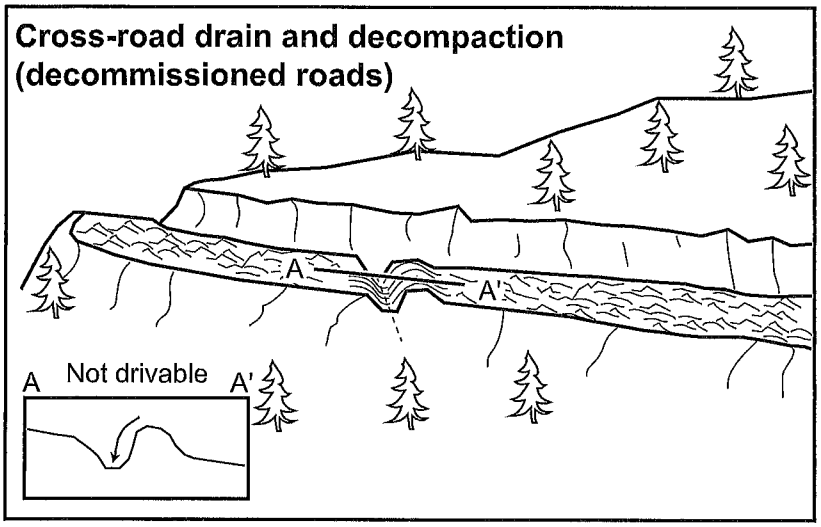
Date: _____

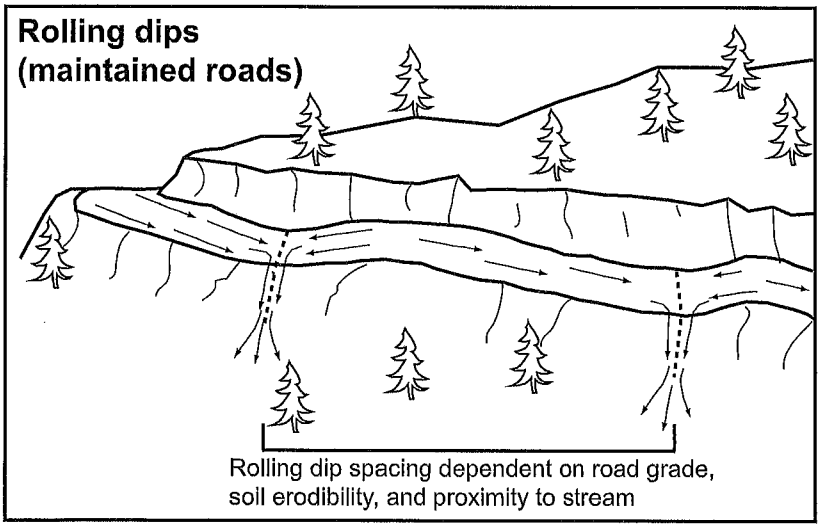
Appendix B. Final Streambed Alteration Agreement Notification No. 1600-2019-0253-R1

Appendix C. Typical Drawings for Culvert and Rolling Dip Installation

Typical Methods for Dispersing Road Surface Runoff with Waterbars, Cross-road Drains, and Rolling Dips







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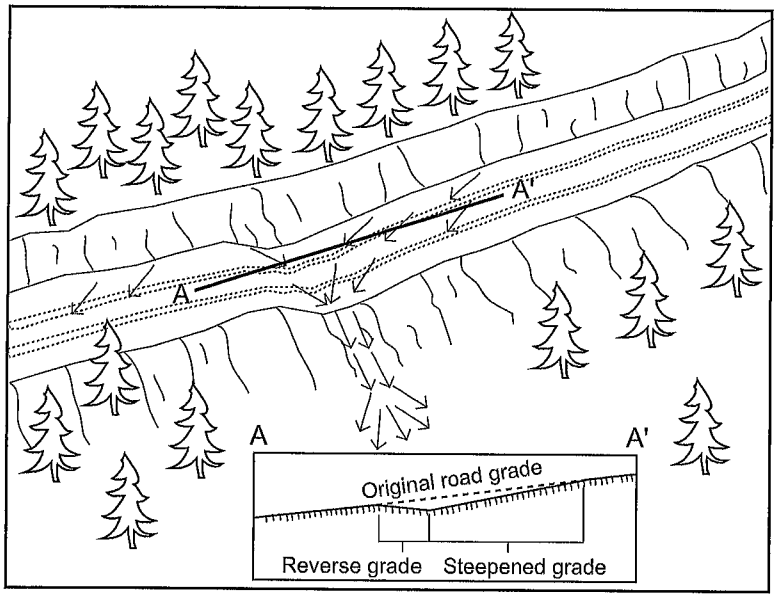
Typical Drawing #10

Typical Road Surface Drainage by Rolling Dips



Rolling dip installation:

1. Rolling dips will be installed in the roadbed as needed to drain the road surface.
2. Rolling dips will be sloped either into the ditch or to the outside of the road edge as required to properly drain the road.
3. Rolling dips are usually built at 30 to 45 degree angles to the road alignment with cross road grade of at least 1% greater than the grade of the road.
4. Excavation for the dips will be done with a medium-size bulldozer or similar equipment.
5. Excavation of the dips will begin 50 to 100 feet up road from where the axis of the dip is planned as per guidelines established in the rolling dip dimensions table.
6. Material will be progressively excavated from the roadbed, steepening the grade unitl the axis is reached.
7. The depth of the dip will be determined by the grade of the road (see table below).
8. On the down road side of the rolling dip axis, a grade change will be installed to prevent the runoff from continuing down the road (see figure above).
9. The rise in the reverse grade will be carried for about 10 to 20 feet and then return to the original slope.
10. The transition from axis to bottom, through rising grade to falling grade, will be in a road distance of at least 15 to 30 feet.

Table of rolling dip dimensions by road grade

Road grade %	**Upslope approach distance** (from up road start to trough) ft	**Reverse grade distance** (from trough to crest) ft	**Depth at trough outlet** (below average road grade) ft	**Depth at trough inlet** (below average road grade) ft
<6	55	15 - 20	0.9	0.3
8	65	15 - 20	1.0	0.2
10	75	15 - 20	1.1	0.01
12	85	20 - 25	1.2	0.01
>12	100	20 - 25	1.3	0.01

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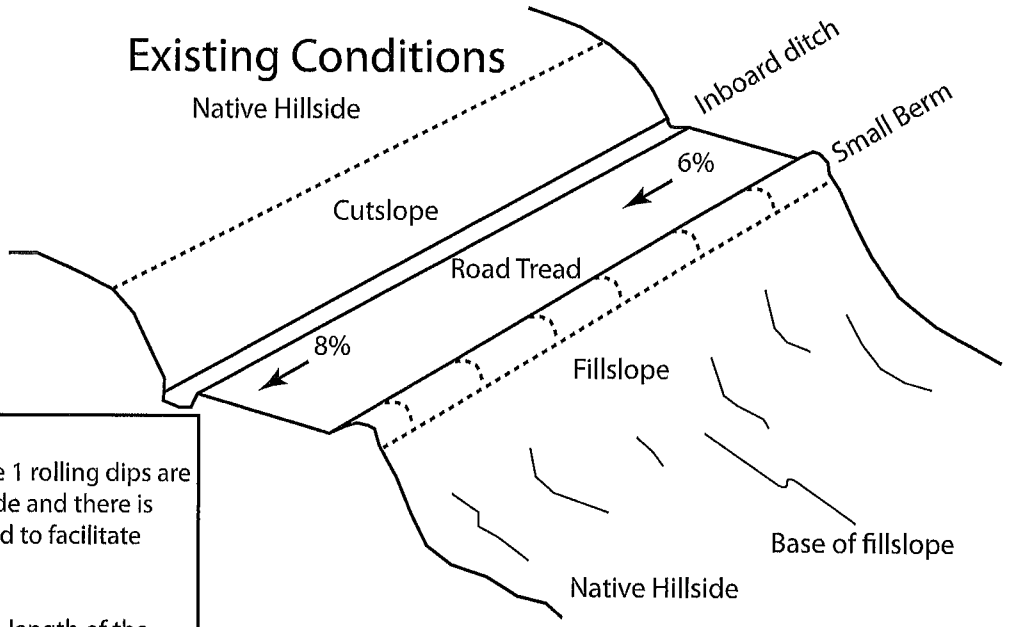
Typical Drawing #11

Standard (Type 1) Rolling Dip Construction

Existing Conditions



Notes

Rolling dip type 1 existing conditions: Type 1 rolling dips are utilized when roads are less than 12-14% grade and there is proximal outfall adjacent to the outboard road to facilitate road drainage.

Design Notes:

1) The berm should be removed for the entire length of the dip.

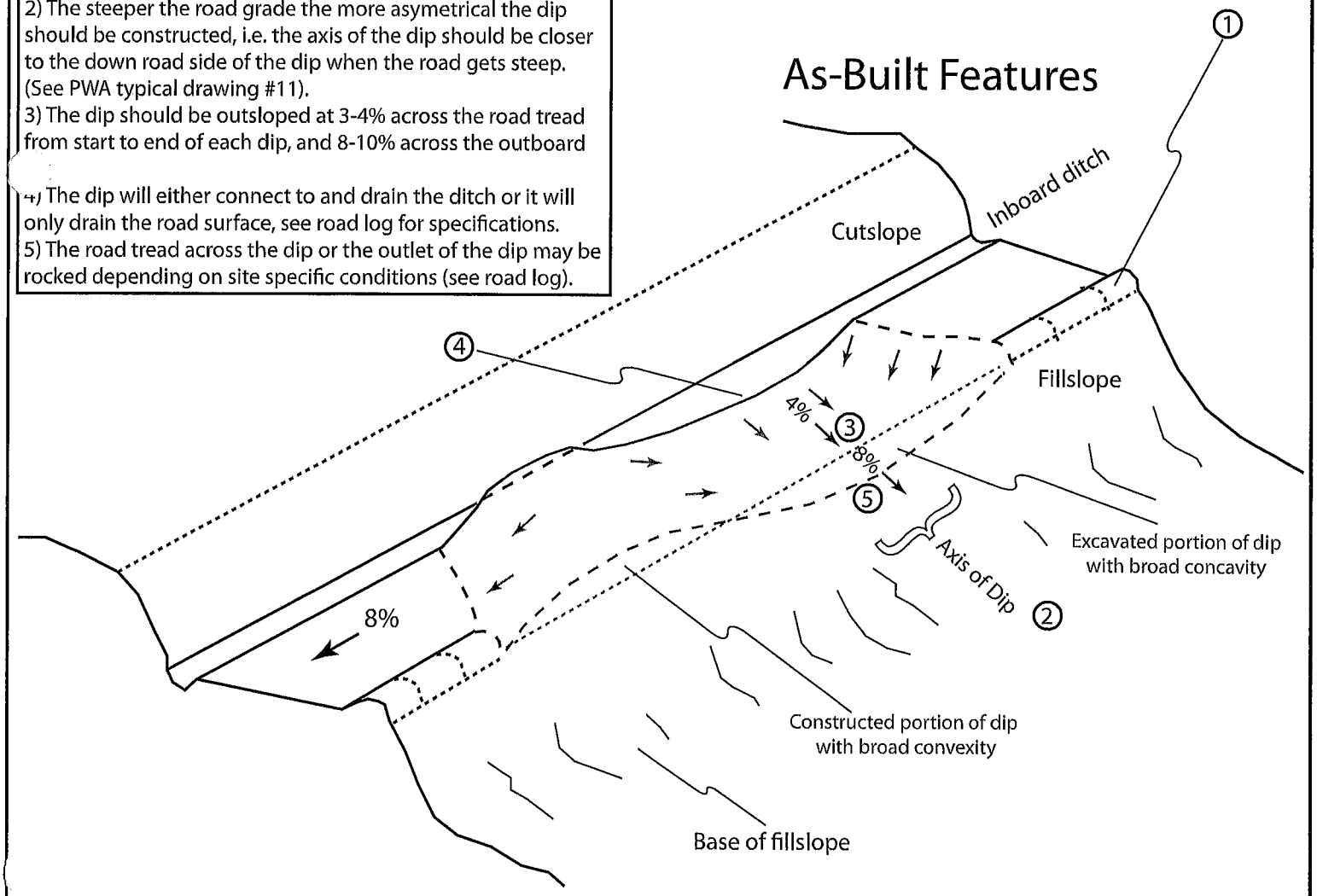
2) The steeper the road grade the more asymetrical the dip should be constructed, i.e. the axis of the dip should be closer to the down road side of the dip when the road gets steep. (See PWA typical drawing #11).

3) The dip should be outsloped at 3-4% across the road tread from start to end of each dip, and 8-10% across the outboard

4) The dip will either connect to and drain the ditch or it will only drain the road surface, see road log for specifications.

5) The road tread across the dip or the outlet of the dip may be rocked depending on site specific conditions (see road log).

As-Built Features



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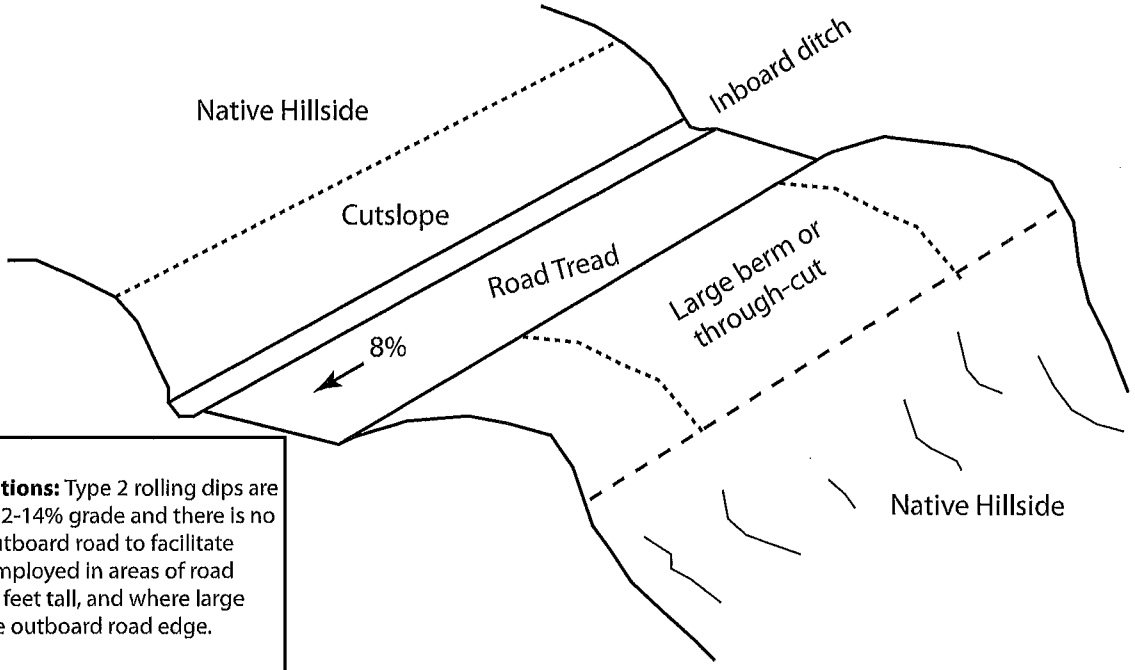
PWA Typical Drawing #19a

Type 2 Rolling Dip Construction

(Through-cut or thick berm road reaches)



Notes

Rolling dip type 2 existing conditions: Type 2 rolling dips are utilized when roads are less than 12-14% grade and there is no proximal outfall adjacent to the outboard road to facilitate road drainage. These should be employed in areas of road through-cuts generally less than 3 feet tall, and where large wide and/or tall berms exist on the outboard road edge.

Design Notes:

1) The berm or native hillside should be removed for the entire length of the excavated portion of the dip, or, at a minimuim through the axis of the dip.

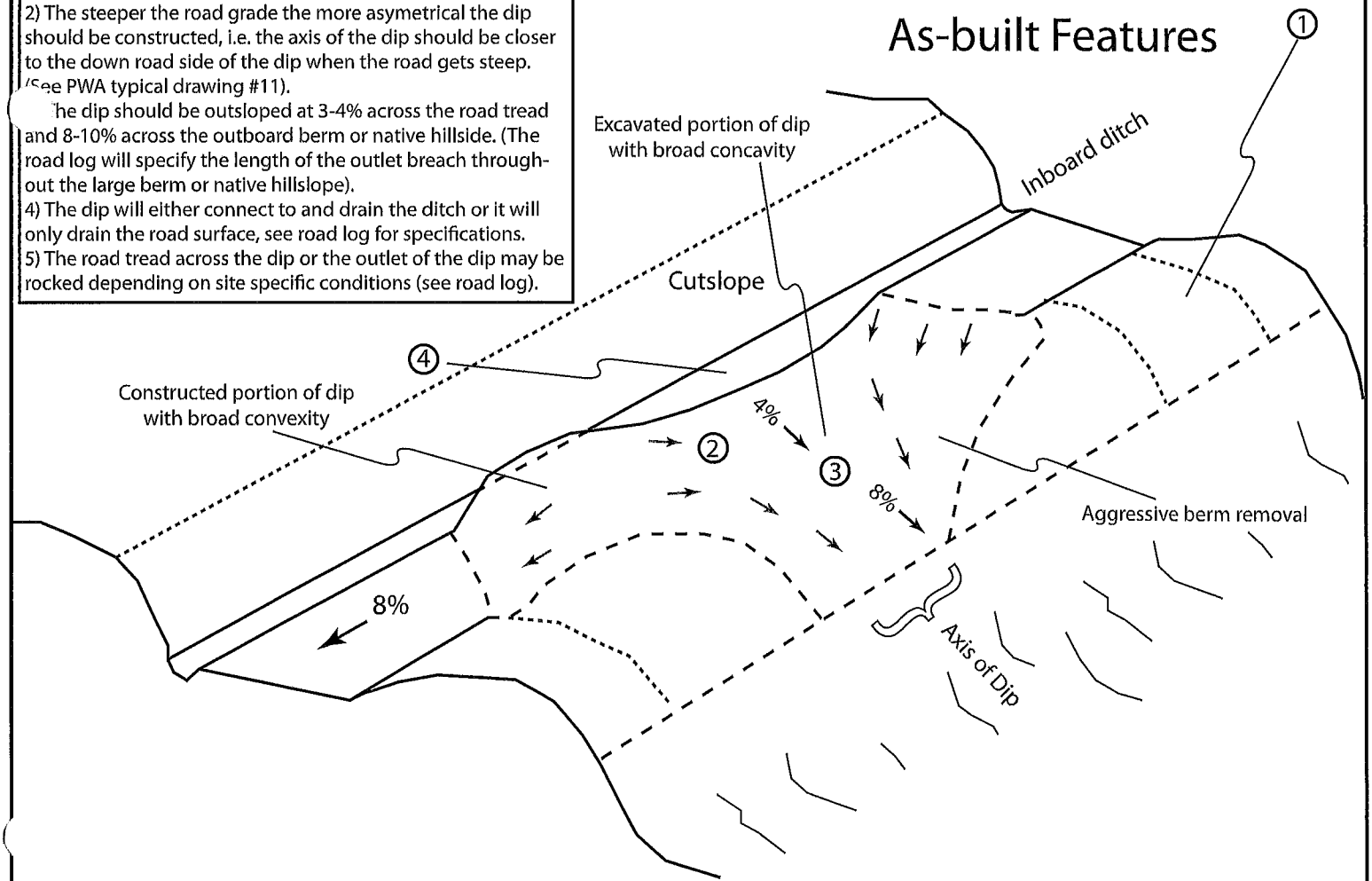
2) The steeper the road grade the more asymetrical the dip should be constructed, i.e. the axis of the dip should be closer to the down road side of the dip when the road gets steep. (See PWA typical drawing #11).

3) The dip should be outsloped at 3-4% across the road tread and 8-10% across the outboard berm or native hillside. (The road log will specify the length of the outlet breach throughout the large berm or native hillslope).

4) The dip will either connect to and drain the ditch or it will only drain the road surface, see road log for specifications.

5) The road tread across the dip or the outlet of the dip may be rocked depending on site specific conditions (see road log).

As-built Features



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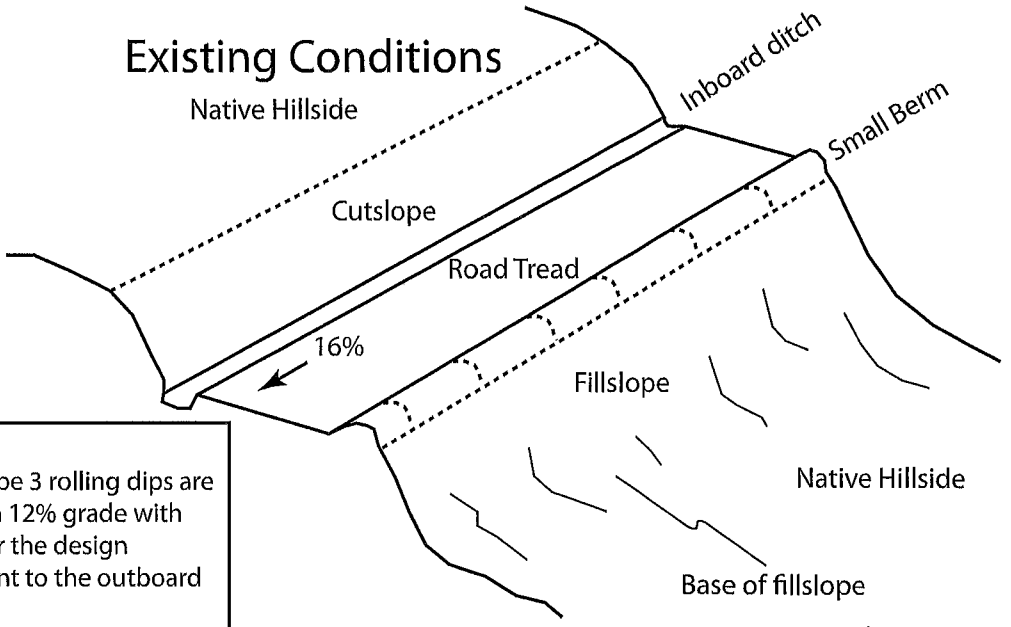
Type 3 Rolling Dip Construction
(steep slope outslope)

Existing Conditions

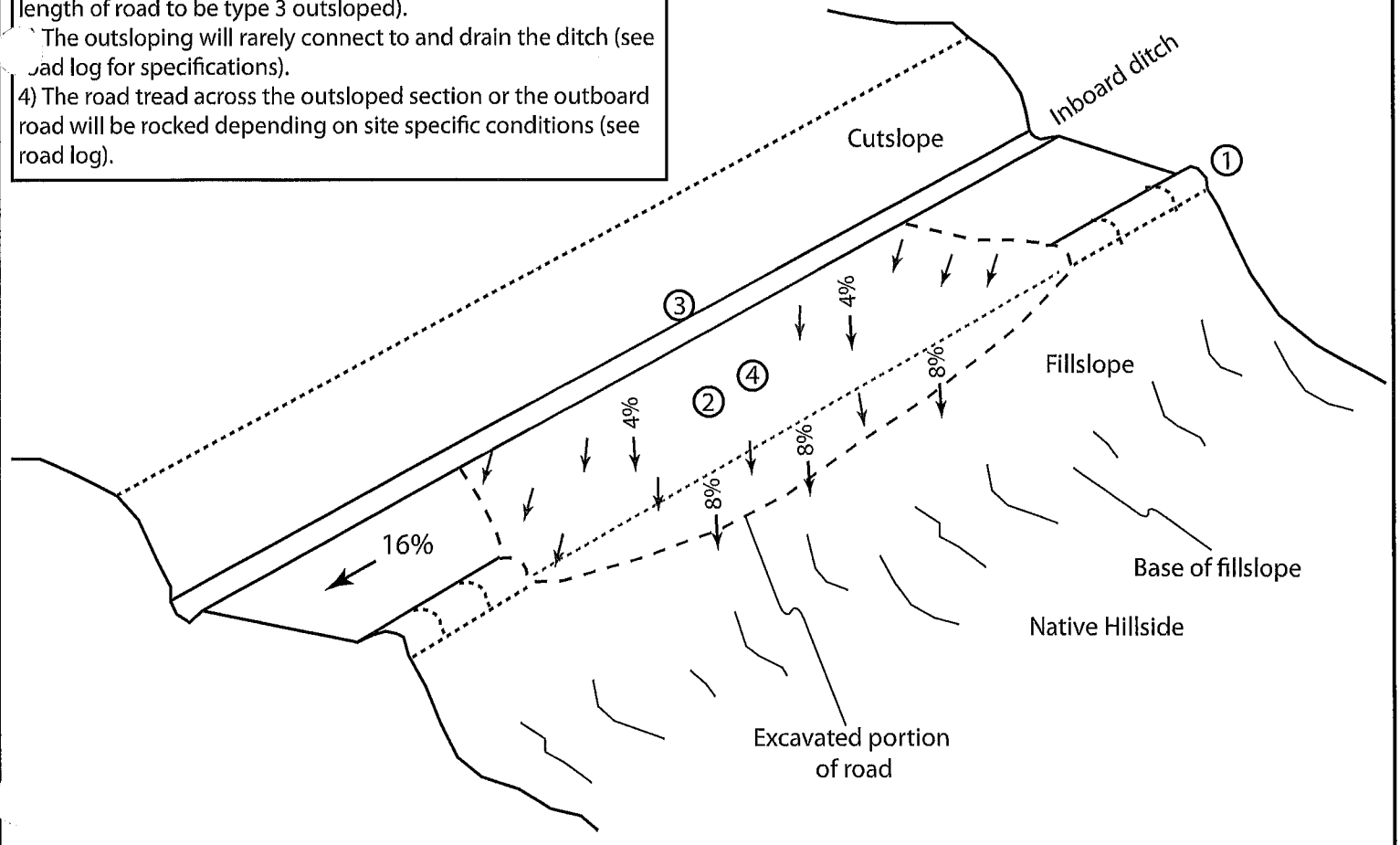


Notes

Rolling dip type 3 existing conditions: Type 3 rolling dips are utilized when roads grades are steeper than 12% grade with little opportunity to create reverse grade for the design vehicle, and there is proximal outfall adjacent to the outboard road to facilitate road drainage.

Design Notes:

1) The berm should be removed for the entire length of the outsloped section.
2) The dip should be outsloped at 2-4% across the road tread and 4-8% across the outboard fill. (The road log will specify the length of road to be type 3 outsloped).
3) The outsloping will rarely connect to and drain the ditch (see road log for specifications).
4) The road tread across the outsloped section or the outboard road will be rocked depending on site specific conditions (see road log).



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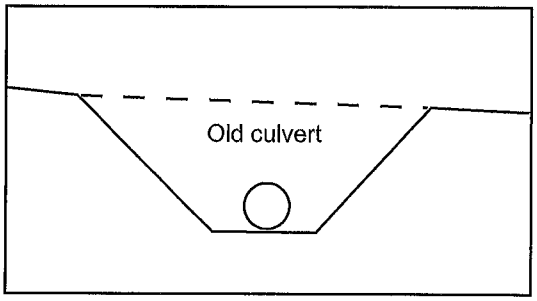
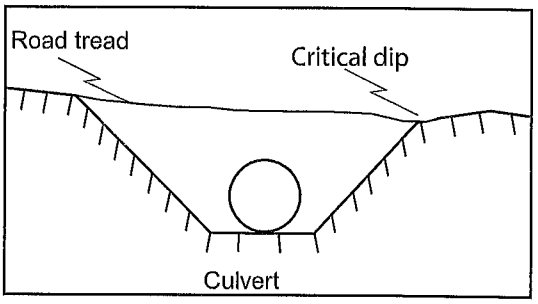
PWA Typical Drawing #19c

Typical Design of Upgraded Stream Crossings



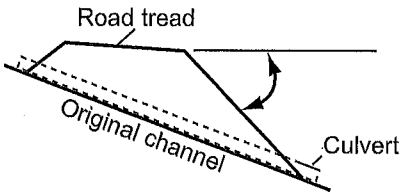
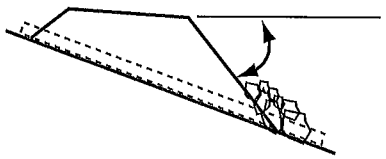
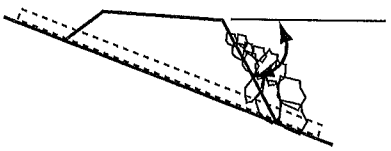


Stream crossing culvert Installation

1. Culverts shall be aligned with natural stream channels to ensure proper function, and prevent bank erosion and plugging by debris.
2. Culverts shall be placed at the base of the fill and the grade of the original streambed or downspouted past the base of the fill.
3. Culverts shall be set slightly below the original stream grade so that the water drops several inches as it enters the pipe.
5. To allow for sagging after burial, a camber shall be between 1.5 to 3 incher per 10 feet culvert pipe length.
6. Backfill material shall be free of rocks, limbs or other debris that could dent or puncture the pipe or allow water to seep around pipe.
7. First one end and then the other end of the culvert shall be covered and secured. The center is covered last.
8. Backfill material shall be tamped and compacted throughout the entire process:
   - Base and side wall material will be compacted before the pipe is placed in its bed.
   - backfill compacting will be done in 0.5 - 1 foot lifts until 1/3 of the diameter of the culvert has been covered. A gas powered tamper can be used for this work.
9. Inlets and outlets shall be armored with rock or mulched and seeded with grass as needed.
10. Trash protectors shall be installed just upstream from the culvert where there is a hazard of floating debris plugging the culvert.
11. Layers of fill will be pushed over the crossing until the final designed road grade is achieved, at a minimum of 1/3 to 1/2 the culvert diameter.

Note:
Road upgrading tasks typically include upgrading stream crossings by installing larger culverts and inlet protection (trash barriers) to prevent plugging. Culvert sizing for the 100-year peak storm flow should be determined by both field observation and calculations using a procedure such as the Rational Formula.

Armoring fill faces

Fill angles ≤ 2:1	Fill angles (between 2:1 & 1.5:1)	Fill angles steeper than 1.5:1
 No rock armor needed	 Armor 1/4 up fill face	 Armor 3/4 way up fill face

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PWA Typical Drawing #4

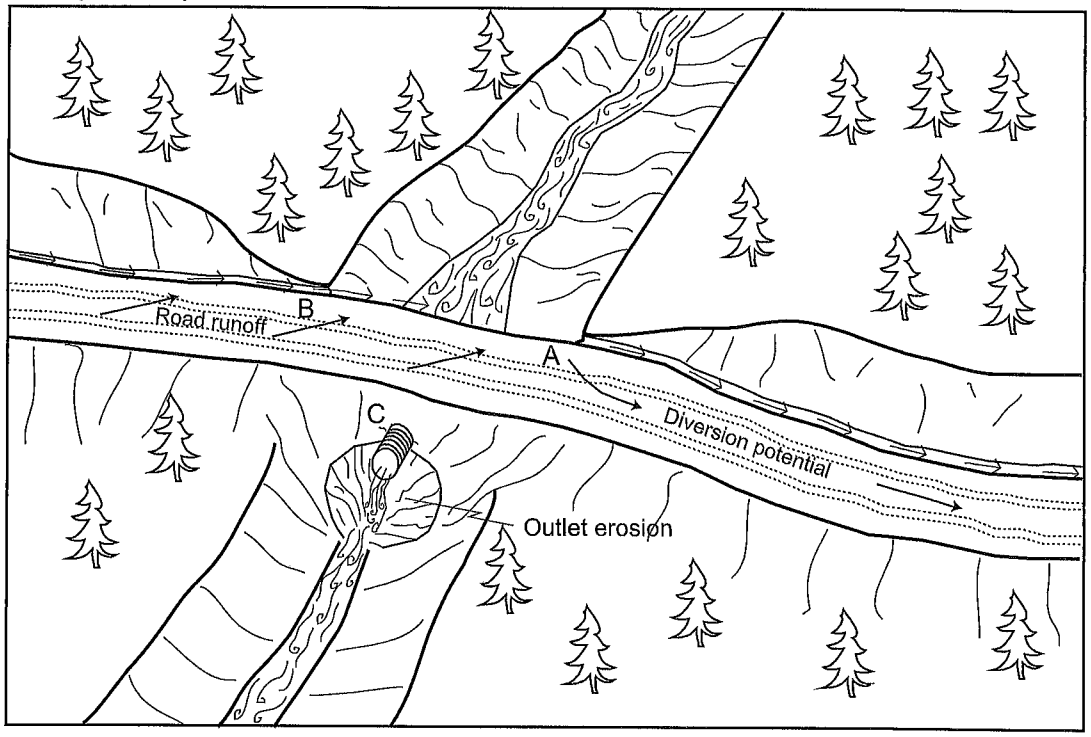
Typical Problems and Applied Treatments for a Non-fish Bearing Upgraded Stream Crossing

Problem condition (before)

A - Diversion potential

B - Road surface and ditch drain to stream

C - Undersized culvert high in fill with outlet erosion

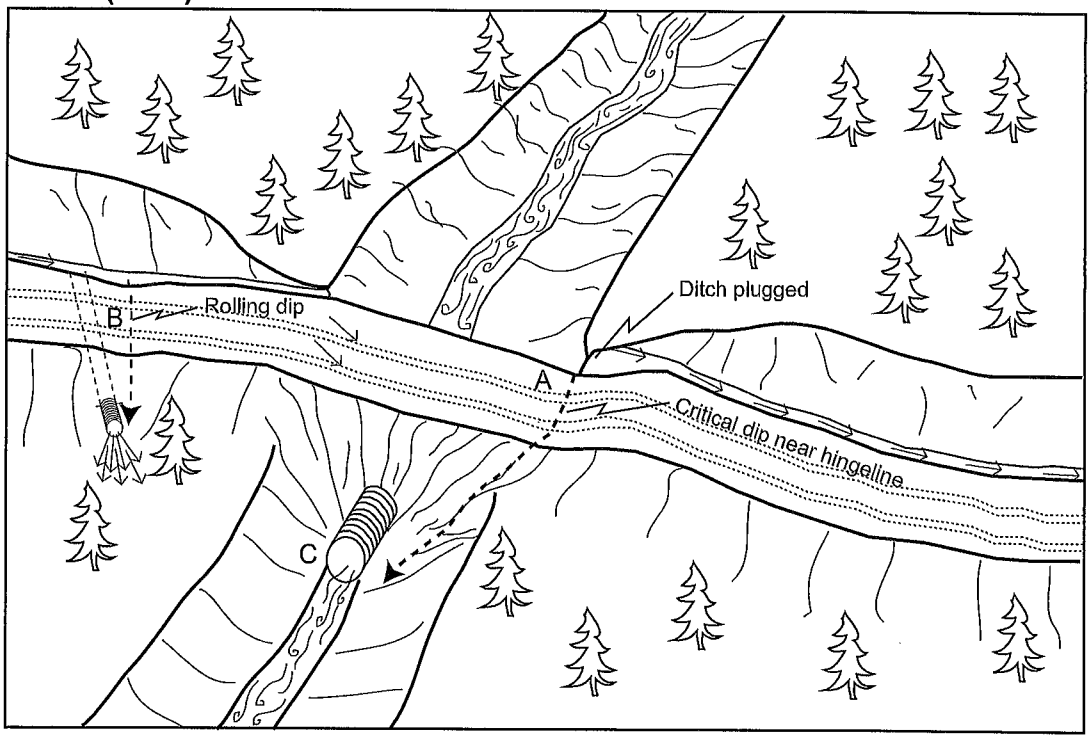


Treatment standards (after)

A - No diversion potential with critical dip installed near hingeline

B - Road surface and ditch disconnected from stream by rolling dip and ditch relief culvert

C - 100-year culvert set at base of fill



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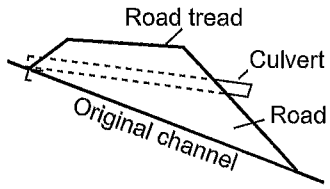
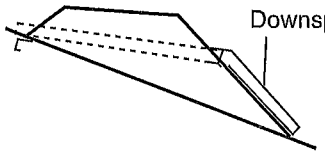
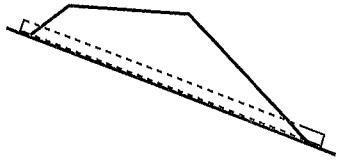
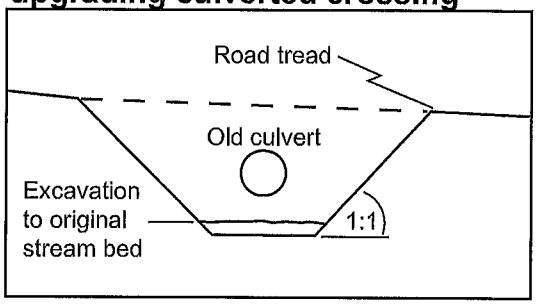
PWA Typical Drawing #1a

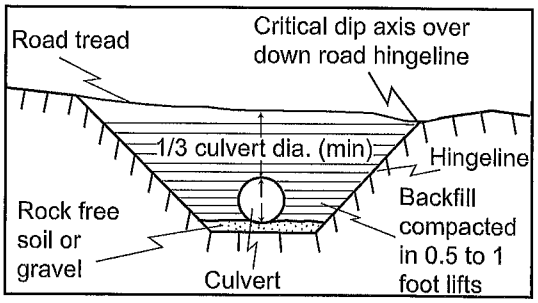
Typical Design of a Non-fish Bearing Culverted Stream Crossing

Existing	Upgraded	Upgraded (preferred)
		
1. Culvert not placed at channel grade. 2. culvert does not extend past base of fill.	1. Culvert not placed at channel grade. 2. Downspout added to extend outlet past road fill.	1. Culvert placed at channel grade. 2. Culvert inlet and outlet rest on, or partially in, the originial streambed.

Excavation in preparation for upgrading culverted crossing



Upgraded stream crossing culvert installation



Note:
Road upgrading tasks typically include upgrading stream crossings by installing larger culverts and inlet protection (trash barriers) to prevent plugging. Culvert sizing for the 100-year peak storm flow should be determined by both field observation and calulations using a procedure such as the Rational Formula.

Stream crossing culvert Installation

1. Culverts shall be aligned with natural stream channels to ensure proper function, and prevent bank erosion and plugging by debris.
2. Culverts shall be placed at the base of the fill and the grade of the original streambed, or downspouted past the base of the fill.
3. Culverts shall be set slightly below the original stream grade so that the water drops several inches as it enters the pipe.
5. To allow for sagging after burial, a camber shall be between 1.5 to 3 incher per 10 feet culvert pipe length.
6. Backfill material shall be free of rocks, limbs or other debris that could dent or puncture the pipe or allow water to seep around pipe.
7. First one end then the other end of the culvert shall be covered and secured.;The center is covered last.
8. Backfill material shall be tamped and compacted throughout the entire process:
   - Base and side wall material will be compacted before the pipe is placed in its bed.
   - Backfill compacting will be done in 0.5 - 1 foot lifts until 1/3 of the diameter of the culvert has been covered. A gas powered tamper can be used for this work.
9. Inlets and outlets shall be armored with rock or mulched and seeded with grass as needed.
10. Trash protectors shall be installed just upstream from the culvert where there is a hazard of floating debris plugging the culvert.
11. Layers of fill will be pushed over the crossing until the final designed road grade is achieved, at a minimum of 1/3 to 1/2 the culvert diameter.

Erosion control measures for culvert replacement

Both mechanical and vegetative measures will be employed to minimize accelerated erosion from stream crossing and ditch relief culvert upgrading. Erosion control measures implemented will be evaluated on a site by site basis. Erosion control measures include but are not limited to:

1. Minimizing soil exposure by limiting excavation areas and heavy equipment distrubance.
2. Installing filter windrows of slash at the base of the road fill to minimize the movement of eroded soil to downslope areas and stream channels.
3. Retaining rooted trees and shrubs at the base of the fill as "anchor" for the fill and filter windrows.
4. Bare slopes created by construction operations will be protected until vegetation can stabilize the surface. Surface erosion on exposed cuts and fills will be minimized by mulching, seeding, planting, compacting, armoring, and/or benching prior to the first rains.
5. Excess or unusable soil will be stored in long term spoil disposal locations that are not limited by factors such as excessive moisture, steep slopes greater than 10%, archeology potential, or proximity to a watercourse.
6. On running streams, water will be pumped or diverted past the crossing and into the downstream channel during the construction process.
7. Straw bales and/or silt fencing will be employed where necessary to control runoff within the construction zone.

Pacific Watershed Associates Inc.
Geologic and Geomorphic Studies • Watershed Restoration • Wildland Hydrology • Erosion Control • Environmental Services
PO Box 4433, Arcata, CA 95518 / Ph: 707-839-5130 / FAX: 707-839-8168 / www.pacificwatershed.com

Typical Drawing #2