

# Water Resource Protection Plan

**WDID#: 1B171602CHUM**

**TRCID#:180101060407TRC340**

*Submitted to:*

**John Zartarian**

*Prepared by:*

**Timberland Resource Consultants**

**165 South Fortuna Blvd**

**Fortuna, CA 95540**

**04/04/2018**

## **Purpose**

This WRPP has been prepared on behalf of the property owner, John Zartarian, for APN 095-201-005 by agreement and in response to the California Water Code Section 13260(a), which requires that any person discharging waste or proposing to discharge waste within any region that could affect the quality of the waters of the state, other than into a community sewer system, shall file with the appropriate regional water board a Report of Waste Discharge (ROWD) containing such information and data as may be required by the Regional Water Board. The Regional Water Board may waive the requirements of Water Code section 13260 for specific types of discharges if the waiver is consistent with the Basin Plan and in the public interest. Any waiver is conditional and may be terminated at any time. A waiver should include monitoring requirements to verify the adequacy and effectiveness of the waiver's conditions. Order R1-2015-0023 conditionally waives the requirement to file a ROWD for discharges and associated activities described in finding 4.

## **Scope of Report**

Order No. R1-2015-0023 states that "Tier 2 Dischargers and Tier 3 Dischargers who intend to cultivate cannabis before, during, or following site cleanup activities shall develop and implement a water resource protection plan that contains the elements listed and addressed below. Dischargers must keep this plan on site, and produce it upon request by Regional Water Board staff. Management practices shall be properly designed and installed, and assessed periodically for effectiveness. If a management measure is found to be ineffective, the plan must be adapted and implemented to incorporate new or additional management practices to meet standard conditions. Dischargers shall certify annually to the Regional Water Board individually or through an approved third party program that the plan is being implemented and is effectively protecting water quality, and report on progress in implementing site improvements intended to bring the site into compliance with all conditions of this Order."

## **Methods**

The methods used to develop this WRPP include both field and office components. The office component consisted of aerial photography review and interpretation, existing USGS quad map review, GIS mapping of field data, review of on-site photography points, streamflow calculations, and general planning. The field component included identifying and accurately mapping all watercourses, wet areas, and wetlands located downstream of the cultivation areas, associated facilities, and all appurtenant roads accessing such areas. An accurate location of the Waters of the State is necessary to make an assessment of whether potential and existing erosion sites/pollution sites have the potential to discharge waste to an area that could affect waters of the State (including groundwater). Next, all cultivation areas, associated facilities, and all appurtenant roads accessing such areas were assessed for discharges and related controllable water quality factors from the activities listed in Order R1-2015-0023, Finding 4a-j. The field assessment also included an evaluation and determination of compliance with the Standard Conditions per Provision I.B of Order No. R1-2015-0023. The water resource protection plans required under Tier 2 are meant to describe the specific measures a discharger implements to achieve compliance with standard conditions. Therefore, all required components of the water resource protection plan per Provision I.B of Order No. R1-2015-0023 were physically inspected and evaluated. A comprehensive summary of each Standard Condition as it relates to the subject property is appended.

## Monitoring Plan

Tier 2 Dischargers shall include a monitoring element in the water resource protection plan that at a minimum provides for periodic inspection of the site, checklist to confirm placement and efficacy of management measures, and document progress on any plan elements subject to a time schedule. Tier 2 Dischargers shall submit an annual report (Appendix C) by March 31 of each year that documents implementation and effectiveness of management measures during the previous year. Tier 2 annual reporting is a function that may be provided through an approved third party program.

Monitoring of the site includes visual inspection and photographic documentation of each feature of interest listed on the site map, with new photographic documentation recorded with any notable changes to the feature of interest. At a minimum, all site features must be monitored annually, to provide the basis for completion of the annual re-certification process. Additionally, sites shall be monitored at the following times to ensure timely identification of changed site conditions and to determine whether implementation of additional management measures is necessary to iteratively prevent, minimize, and mitigate discharges of waste to surface water: 1) just prior to October 15 to evaluate site preparedness for storm events and storm water runoff, 2) following the accumulation of 3" total precipitation or by November 15, whichever is sooner, and 3) following any rainfall event with an intensity of 3" precipitation in 24 hours. Precipitation data can be obtained from the National Weather Service Forecast Office (e.g. by entering the zip code of the parcel location at <http://www.srh.noaa.gov/forecast>).

## Monitoring Plan Reporting Requirements

Order No. R1-2015-0023, Appendix C must be submitted to the Regional Water Board or approved third party program upon initial enrollment in the Order (NOI) and annually thereafter by March 31. Forms submitted to the Regional Water Board shall be submitted electronically to [northcoast@waterboards.ca.gov](mailto:northcoast@waterboards.ca.gov). If electronic submission is infeasible, hard copies can be submitted to: North Coast Regional Water Quality Control Board, 5550 Skylane Boulevard, Suite A, Santa Rosa, CA 95403.

## Property Description

The site consists of a wooded 26 acre parcel composed of mixed redwood/tanoak timber. The slope of the property varies from 30% to 50% with elevations ranging from 400 to 900 ft. The property is located within the SW ¼ of Section 35, Township 1S, Range 2E, Humboldt County.

This project currently consists of two commercial cannabis cultivation sites (CS) that total approximately 10,000 square feet. These sites are located within a permitted Less Than 3-acre Conversion development, 1-16EX-110 HUM.

- CS #1 consists of an approximately 10,000 square foot landing built into a 40% slope. The landing contains seven 4' wide by 68' long hoop houses for light deprivation cultivation as well as 150 twenty five gallon fabric pots for full sun cultivation. On top of the cut bank above the landing sits another two 4' wide by 40' long soil beds surrounded by 200 thirty gallon fabric pots for full sun cultivation. This site totals 9,000 square feet of cannabis cultivation.
- CS #2 consists of a flattened site adjacent to the seasonal access road that accesses CS #1. This site contains two rows of 30 gallon fabric pots that cover approximately 1,000 square feet.

Agricultural irrigation water for this project is sourced from a 160' well drilled on the property in May of 2017. A copy of the well log is attached to this document. The Discharger plans to directly divert groundwater from the well to the cultivation site for the irrigation of cannabis.

Domestic water for this project is currently sourced from a wooden diversion structure located in a Class II spring adjacent to a Class II watercourse. The point of diversion (POD) consists of a



wooden box sunken into a seeping hill side. Water is gravity fed using ¾" polypipe to a 50 gallon pickle barrel used as a settling tank. Water is pumped from here to the house for domestic use.

### **Assessment of Standard Conditions**

Assessment of Standard Conditions consisted of field examinations on 03/09/2018 by TRC Staff, Jack Henry. Data was also sourced from a Lake and Streambed Alteration Agreement submitted by Chris Carroll of Timberland Resource Consultants. The examination evaluated areas near, and areas with the potential to directly impact, watercourses for sensitive conditions. This includes but is not limited to, existing and proposed roads, skid trails and landings, unstable and erodible watercourse banks, unstable upslope areas, debris, jam potential, inadequate flow capacity, changeable channels, overflow channels, flood prone areas, and riparian zones. Field examinations also evaluated all roads and trails on the property, developed areas, cultivation sites, and any structures and facilities appurtenant to cultivation on the property. Anywhere the Standard Conditions are not met on the property, descriptions of the assessments and the prescribed treatments are outlined following each associated section below.

### **Summary of Standard Conditions Compliance**

1. Site maintenance, erosion control, and drainage features Y/N
2. Stream crossing maintenance Y/N
3. Riparian and wetland protection and management Y/N
4. Spoils management Y/N
5. Water storage and use Y/N
6. Irrigation runoff Y/N
7. Fertilizers and soil amendments Y/N
8. Pesticides and herbicides? Y/N
9. Petroleum products and other chemicals Y/N
10. Cultivation-related wastes Y/N
11. Refuse and human waste Y/N

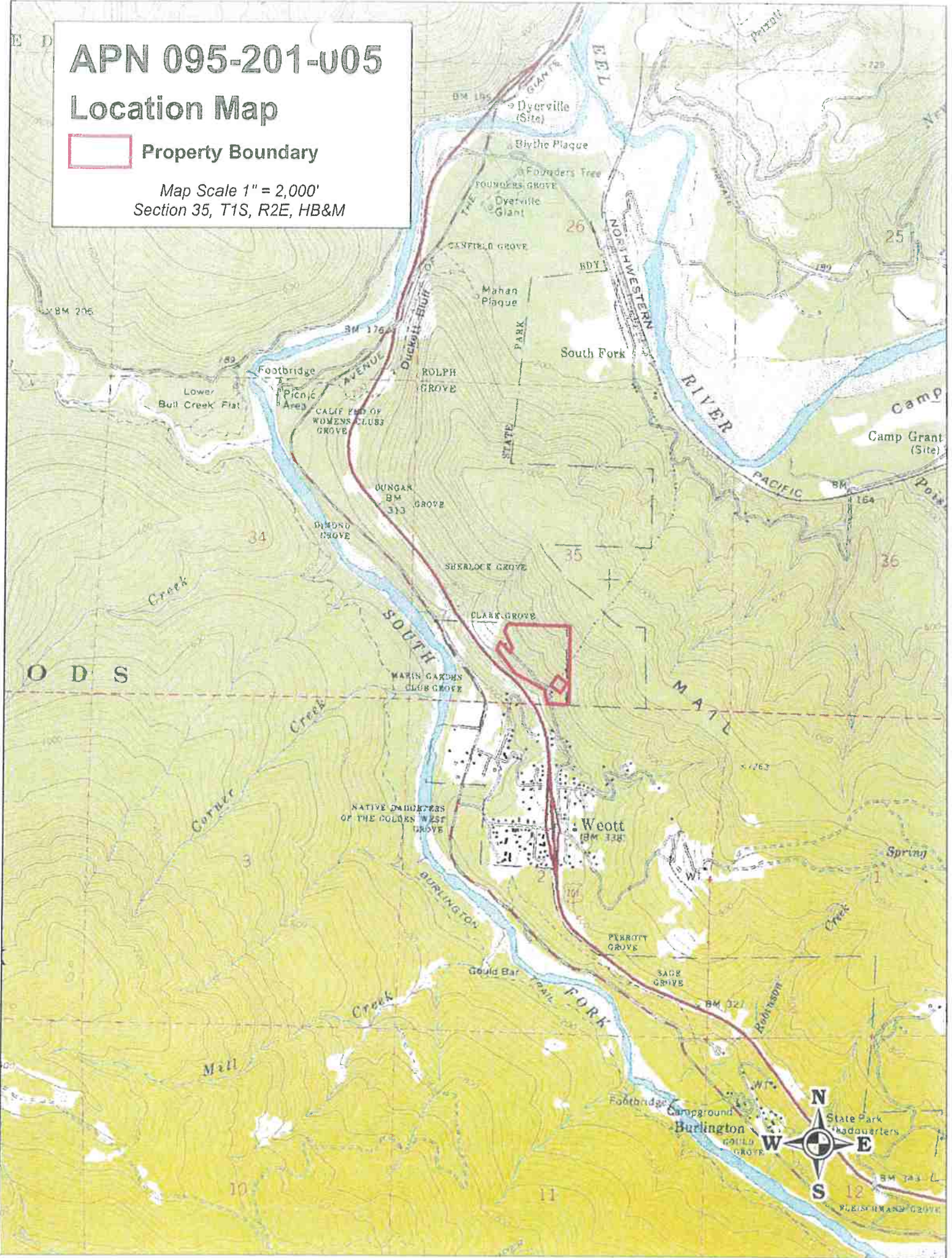


# APN 095-201-U05

## Location Map

 Property Boundary

Map Scale 1" = 2,000'  
Section 35, T1S, R2E, HB&M





### Mitigation Report (Identified Sites Requiring Remediation)

\*Time schedule for treatment accounts for appropriate permit approvals and allowed seasons of operation.

Unique Map Point(s)	Map Point Description	Associated Standard Condition	Temporary BMP	Permanent BMP	Priority for Action	Time Schedule for completion of Permanent BMP	Completion Date
MP #1	Run-off flowing along road surface resulting in sediment discharge to Class III watercourse	A.1.a.	N/A	Install drainage feature such as a water break or rolling dip per attached specifications	2	10/15/2018	
MP #2	Precipitation falling on CS #1 flows along the access road resulting in sediment transportation	A.1.b.	N/A	Install French drain per attached specifications	3	10/15/2019	
MP #3	Run-off flowing down the access road has resulted in sediment transportation	A.1.b.	N/A	Install drainage feature such as a water break or rolling dip per attached specifications	2	10/15/2018	
MP #4	Swale feature is delivering surface water onto the road that accesses the cultivation sites	A.1.b.	N/A	Install minimum 15" diameter relief culvert per attached specifications	2	10/15/2018	
MP #5	Existing 12" diameter relief culvert has failed and is eroding	A.1.b.	N/A	Install minimum 15" diameter relief culvert per attached specifications	2	10/15/2018	
SC #1	Existing 24" diameter CMP on an unnamed Class II watercourse is undersized for the predicted 100 year flow	A.2.	N/A	Upgrade crossing to minimum 36" diameter culvert per attached specifications	3	10/15/2019	
SC #2	Existing 24" diameter CMP on an unnamed Class II watercourse is undersized for the predicted 100 year flow	A.2.	N/A	Monitor crossing	N/A	Annually	
No Unique Map Point Given	No reporting documents associated with this surface diversion	A.5.e.	N/A	File ISWDU for surface water diversion.	1	10/15/2018	

Treat Priority: Treatment Priority (1) indicates a very high priority with treatment being planned to occur immediately, (2) indicates a high priority site with treatment to occur prior to the start of the winter period (Oct. 15), (3) indicates a moderate priority with treatment being planned to occur within one year, or prior to the winter period (Oct. 15) of the 2<sup>nd</sup> season of operations, and (4) indicates a low priority with treatment being planned to occur in the shortest time possible, but no later than the expiration of this Order (five years).



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### WRPP Site Map

- Property Line
- Sunny Lane (Easement)
- Seasonal Access Road
- Map Point (MP)

- Class II Watercourse
- Class III Watercourse
- Point of Diversion
- Well
- Storage/Catchment Tank
- Stream Crossing

- House Cultivation
- Full Sun Soil Beds Cultivation
- Full Sun Fabric Pots Cultivation
- Existing Structure

2016 NAIP DOQ  
Weott, CA 7.5" Quad  
SW1/4 of Sec 35, T1S, R2E, HB&M





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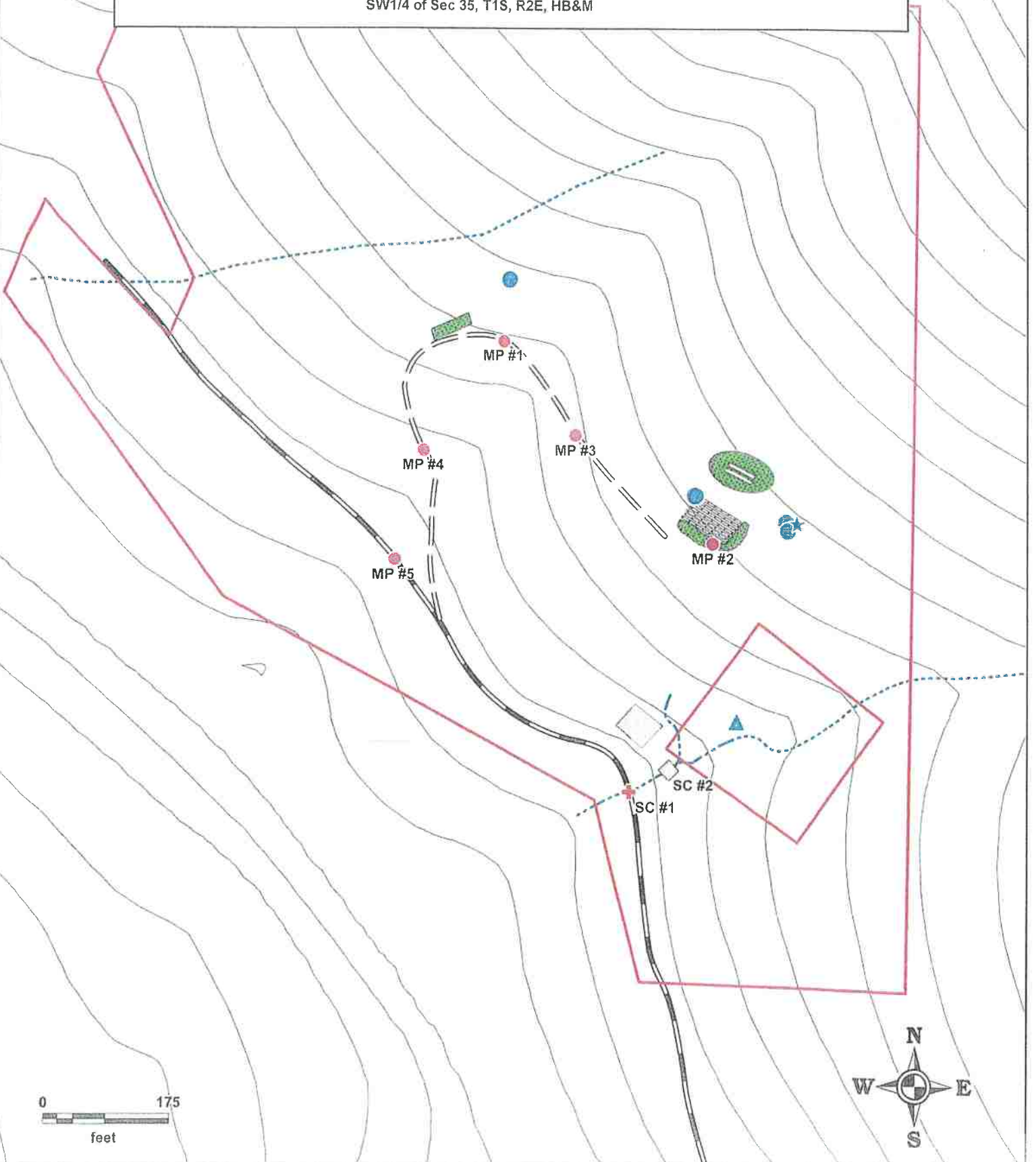
WRPP Site Map

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- House Cultivation
- Full Sun Soil Beds Cultivation
- Full Sun Fabric Pots Cultivation
- Existing Structure

40m Contour Intervals  
Weott, CA 7.5" Quad  
SW1/4 of Sec 35, T1S, R2E, HB&M





## A. Standard Conditions, Applicable to All Dischargers

### 1. Site maintenance, erosion control and drainage features (Compliance: Y / N )

- a. Roads shall be maintained as appropriate (with adequate surfacing and drainage features) to avoid developing surface ruts, gullies, or surface erosion that results in sediment delivery to surface waters.

**There is one location along the road that accesses both cultivation sites where storm run-off is eroding the road surface and discharging sediment to a nearby Class III watercourse. The Discharger shall install a drainage structure at Map Point (MP) #1. A rolling dip or water break installed per attached specifications is recommended.**

- 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.

**Precipitation falling on CS #1 is flowing along the access road resulting in erosion to the road surface. The Discharger shall install a French drain on the cultivated landing at MP #2 and a drainage feature on the access road at MP #3. The French drain shall outlet at a safe location below the fill prism of the landing. French drain BMP specifications have been attached with this document. The drainage feature at MP #3 is recommended to be a rolling dip or water break; specifications have been attached with this document.**

**A drainage swale feature intersects with the road that accesses both cultivation sites. The Discharger revealed in past years water has diverted from the swale feature onto the road surface resulting in erosion at MP #4. Downslope of this location is an existing 12" diameter metal relief culvert that has facilitated in draining run-off from the lower easement road. Minimum 15" diameter relief culverts shall be installed at MP #4 and #5 to assist in draining surface run-off present within the swale. These relief culverts shall be installed per specifications attached to this document.**

- 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.

**Physical reconnaissance of the property revealed no unstable areas per 14CCR 895.1.**

- 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 not hydrologically connected<sup>1</sup>, as feasible, from surface waters, including wetlands, ephemeral, intermittent and perennial streams.

**Erosion identified along the access road at MP #1 showed evidence of a hydrologic connection among CS #1, the native surfaced access road, and a Class III watercourse NW of CS #2. Remedial action proposed in Standard Condition A.1.a. and A.1.b. shall prevent this connection from occurring in the future.**

<sup>1</sup> Connected roads are road segments that deliver road surface runoff, via the ditch or road surface, to a stream crossing or to a connected drain that occurs within the high delivery potential portion of the active road network. A connected drain is defined as any cross-drain culvert, water bar, rolling dip, or ditch-out that appears to deliver runoff to a defined channel. A drain is considered connected if there is evidence of surface flow connection from the road to a defined channel or if the outlet has eroded a channel that extends from the road to a defined channel. ([http://www.forestsandfish.com/documents/Road\\_Mgmt\\_Survey.pdf](http://www.forestsandfish.com/documents/Road_Mgmt_Survey.pdf))

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

**The relief culvert located at MP #5 is showing signs of erosion at the outlet. The Discharger shall install a new minimum 15" diameter relief culvert per attached specifications.**

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

**Construction materials are not stored on property.**

**2. Stream Crossing Maintenance (Compliance: Y  / N )**

- a. Culverts and stream crossings shall be sized to pass the expected 100-year peak streamflow.
- b. Culverts and stream crossings shall be designed and maintained to address debris associated with the expected 100-year peak streamflow.
- c. Culverts and stream crossings shall allow passage of all life stages of fish on fish-bearing or restorable streams, and allow passage of aquatic organisms on perennial or intermittent streams.
- d. Stream crossings shall be maintained so as to prevent or minimize erosion from exposed surfaces adjacent to, and in the channel and on the banks.
- e. Culverts shall align with the stream grade and natural stream channel at the inlet and outlet where feasible.<sup>2</sup>
- 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.<sup>3</sup>

**Two stream crossings (SC) have been identified on the property.**

- **SC #1 consists of an existing 24" diameter culverted metal pipe (CMP) located on an unnamed Class II watercourse. This crossing shall be upgraded to a 36" diameter culvert (metal or plastic) per specifications attached with this document.**
- **SC #2 consists of an existing 24" diameter CMP located on an unnamed Class II watercourse approximately 50' upstream from SC #1. This crossing facilitates the watercourse to pass through the foundation of the garage on the property. Fill material at this crossing consists of poured cement and decorative river rock. The risk of failure at this crossing is low due to the permanent nature of the structure atop the crossing. However, significantly heavy rain events may result in backwater flooding due to the culvert being undersized for the 100 year flood event. In the event of major backwater flooding the topography of the site will likely drain ponded water over the rock driveway and back into the watercourse channel downslope of the crossing.**

**All crossings will be monitored and maintained to assure they function. The two relief culverts addressed in Standard Condition A.1.b. assist in draining a swale feature that**

<sup>2</sup> At a minimum, the culvert shall be aligned at the inlet. If infeasible to align the culvert outlet with the stream grade or channel, outlet armoring or equivalently effective means may be applied.

<sup>3</sup> If infeasible to install a critical dip, an alternative solution may be chosen.



may convey concentrated surface flows but does not flow into other surface waters and thus is not a watercourse.

3. Riparian and Wetland Protection and Management (Compliance: Y☒ / N☐)

- 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 I or II watercourse or within 50 feet of any Class III watercourse or wetlands. The Regional Water Board or its or its Executive Officer may apply additional or alternative<sup>4</sup> conditions on enrollment, including site-specific riparian buffers and other BMPs beyond those identified in water resource protection plans to ensure water quality protection.

**The two cultivation sites on the property are located outside of riparian buffers. CS #1 is over 200' away from the nearest watercourse. CS #2 is approximately 95' away from the nearby Class III watercourse.**

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

**All riparian buffers are maintained at natural slope and native vegetation.**

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

**All riparian buffers have been maintained in their natural state to adequately provide essential functions.**

4. Spoils Management (Compliance: Y☒ / N☐)

- a. Spoils<sup>5</sup> shall not be stored or placed in or where they can enter any surface water.

**Cultivation spoils are stored over winter in their respective containers at the cultivation sites. These locations are outside of any riparian buffers and do not pose a risk of delivery to surface waters.**

- b. Spoils shall be adequately contained or stabilized to prevent sediment delivery to surface waters.

**Cultivation spoils are adequately contained within their respective containers. These consist of wooden bed structures and fabric pots surrounded by a perimeter fence.**

- 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.

**There are no locations where construction or maintenance has generated spoils.**

<sup>4</sup> Alternative site-specific riparian buffers that are equally protective of water quality may be necessary to accommodate existing permanent structures or other types of structures that cannot be relocated.

<sup>5</sup> Spoils are waste earthen or organic materials generated through grading or excavation, or waste plant growth media or soil amendments. Spoils include but are not limited to soils, slash, bark, sawdust, potting soils, rock, and fertilizers.

5. Water Storage and Use (Compliance: Y  / N )

- a. Size and scope of an operation shall be such that the amount of water used shall not adversely impact water quality and/or beneficial uses, including and in consideration with other water use by operations, instream flow requirements and/or needs in the watershed, defined at the scale of a HUC-12<sup>6</sup> watershed or at a smaller hydrologic watershed as determined necessary by the Regional Water Board Executive Officer.

**The Discharger is working to minimize and mitigate their impacts across the watershed that they operate in. This includes increasing water conservation strategies, installing a groundwater diversion, and maintaining the irrigation system. These strategies will reduce this project's potential threats to water quality and beneficial uses. The Discharger shall meter water use and participate in winter monitoring.**

- 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.

**The Discharger currently implements the use of drip emitters and AM/PM irrigation to help conserve water.**

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

**The project contains 17,000 gallons of water storage in the form of two 3,500 gallon and two 5,000 gallon polyethylene rain catchment storage tanks. The Discharger plans to fill storage tanks with rain water, divert from storage, and directly divert from the well once these tanks are empty.**

- d. Water is applied using no more than agronomic rates.<sup>7</sup>

**There is no evidence to conclude that the Discharger irrigates at a greater rate than the growth medium can facilitate. There are no signs of over watering present on-site. It is recommended that the Discharger meter their water use.**

- 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.

**The Discharger has not filed any reporting documents associated with the surface diversion on the property. The Discharger shall file an Initial Statement of Water Diversion and Use with the State Water Resource Control Board.**

- 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.

**All storage tanks are located on small compacted earth pads topped with peat gravel. These locations are stable and ensure the storage tanks remain upright and do not fail.**

<sup>6</sup> See definition and link to maps at: <http://water.usgs.gov/GIS/huc.html>

<sup>7</sup> "Agronomic rates" is defined as the rates of fertilizer and irrigation water that a plant needs to enhance soil productivity and provide the crop or forage growth with needed nutrients for optimum health and growth, without having any excess water or nutrient percolate beyond the root zone.



6. Irrigation Runoff (Compliance: Y☒ / N☐)

- 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.

**There are no signs of irrigation run-off within the cultivation site. The Discharger irrigates at an agronomic rate using drip emitters to minimize run-off and the risk of entrained constituents leaving the site.**

7. Fertilizers and Soil Amendments (Compliance: Y☒ / N☐)

- 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.

**Cultivation soils used the previous season are stored within their container at their cultivation site. There is potential for precipitation to leach residual nutrients from the soils. The Discharger shall cover these containers with a tarp over winter.**

**Fertilizers, soils and other amendments are stored within plastic totes within the garage when not in use. This structure possesses an enclosed cement foundation that adequately prevents the stored materials from influencing surface and/or groundwater.**

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

**All fertilizers and soil amendments are applied by the Discharger at agronomic rates per specifications included in the labeling.**

- c. Cultivation areas shall be maintained so as to prevent nutrients from leaving the site during the growing season and post-harvest.

**Cultivation sites are well maintained with no improperly stored nutrients or fertilizers found throughout the property. The Discharger halts nutrient use during the final weeks of cultivation, promoting plant biomass to uptake the remaining nutrients.**

8. Pesticides/Herbicides (Compliance: Y☒ / N☐)

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 labeling 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.

**Pesticides/herbicides are stored with the fertilizers and amendments in the garage. This structure adequately prevents these chemicals from entering surface water and/or groundwater.**

9. Petroleum products and Other Chemicals (Compliance: Y☒ / N☐)

- 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.

**Fuel products are stored in the garage with the other materials in 5 gallon plastic hand canisters. These hand canisters are additionally contained within a plastic tote.**

- 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.

**Not Applicable**

- c. Dischargers shall ensure that diked areas are sufficiently impervious to contain discharged chemicals.

**Not Applicable**

- d. Discharger(s) shall implement spill prevention, control, and countermeasures (SPCC) and have appropriate cleanup materials available onsite.

**Not Applicable**

- 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.

**Not Applicable**

10. Cultivation-related Wastes (Compliance: Y☒ / N☐)

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<sup>8</sup> 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.

**There are no locations where cultivation waste is uncontained. There is potential under heavy rainfall conditions for the soil beds to inundate and transport perlite. The Discharger shall cover these spoils over winter to prevent this.**

<sup>8</sup> Plant waste may also be composted, subject to the same restrictions cited above for cultivation-related waste storage.



**11. Refuse and Human Waste (Compliance: Y☒ / N☐)**

- 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.

**According to the Discharger there is a permitted septic system associated with the residence on this property. The septic system is approximately 60' from the nearby Class II watercourse.**

- 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.

**Refuse and garbage are contained in garbage cans stored in the garage. These containers adequately prevent trash and refuse from delivering to surface waters.**

- c. Garbage and refuse shall be disposed of at an appropriate waste disposal location.

**All waste and refuse is transported to a solid waste disposal site once a week.**

**12. Remediation/Cleanup/Restoration**

Remediation/cleanup/restoration activities may include, but are not limited to, removal of fill from watercourses, stream restoration, riparian vegetation planting and maintenance, soil stabilization, erosion control, upgrading stream crossings, road outcropping 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 B accompanying this Order 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.

**Mitigation measures are listed in the Mitigation Report and also noted above in the document. All locations listed within the mitigation report will be monitored by the discharger.**

Photographs



**Picture 1:** Seven of the 4' wide by 68' long hoop houses that make up part of CS #1. Photo date: 03/09/2018



## Photographs



**Picture 2:** On top of the cut bank above the landing shown in Picture 1 sits another two 4' wide by 40' long soil beds surrounded by two hundred 30 gallon fabric pots for full sun cultivation. Photo date: 03/09/2018

## Photographs



**Picture 3:** CS #2 consists of a small landing that contains 30 thirty gallon fabric pots. Photo date: 03/09/2018



## Photographs



**Picture 4:** The well is located in between these two 5,000 gallon rain catchment/storage tanks.  
Photo date: 03/09/2018.

## Photographs



**Picture 5:** The point of diversion (POD) consists of a wooden box sunken into a seeping hill side. Water is gravity fed using  $\frac{3}{4}$ " polypipe to a 50 gallon pickle barrel used as a settling tank. Water is pumped from here to storage tanks throughout the property. Photo date: 03/09/2018



Photographs



**Picture 6 + 7:** Photographs looking above (top) and below (bottom) the POD. Photo date: 03/09/2018



## Photographs



**Picture 8:** Storm run-off is flowing down this road where it is discharging sediment to a nearby Class III watercourse. A drainage feature such as a rolling dip or water break shall be installed at this location, MP #1, per specifications attached with this document. Photo date: 03/09/2018.

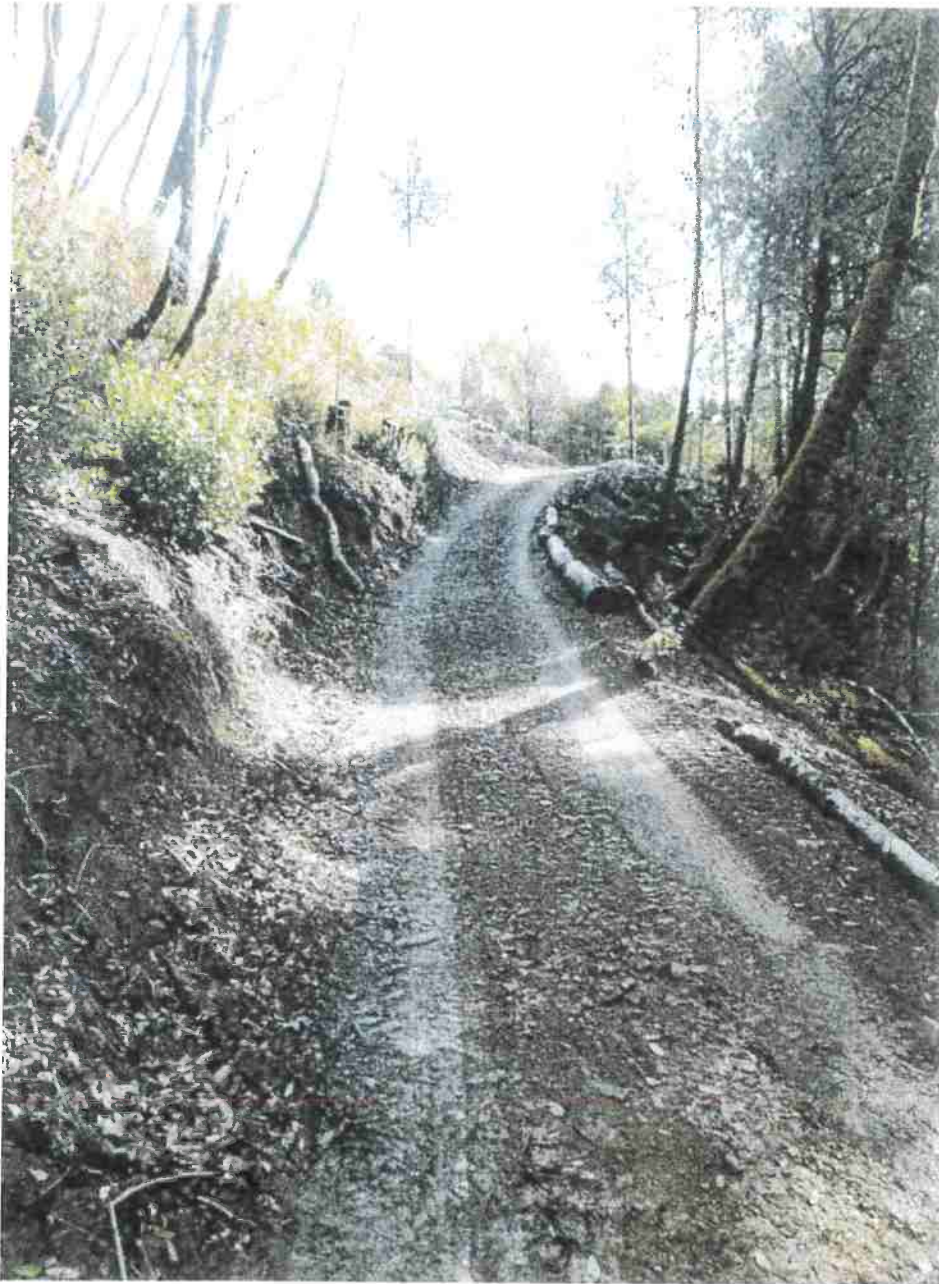


## Photographs



**Picture 9:** MP #2 is where a French drain shall be installed within the surface of the landing containing CS #1. The French drain will reduce run-off that currently drains along the access road and causing sediment transportation. Photo date: 03/09/2018

## Photographs



**Picture 10:** This photo shows the section of road directly below CS #1. A drainage feature such as a rolling dip or water break shall be installed here, MP #3 Photo date: 03/09/2018



## Photographs



**Picture 11:** MP #4 is where a swale feature intersects with the access road on the property. The Discharger shall install a relief culvert per attached stream crossing specifications at this location.  
Photo date: 03/09/2018

Photographs



**Picture 12:** View of the swale feature looking upslope from MP #4. Photo date: 03/09/2018



Photographs



**Picture 13:** View of the swale feature looking downslope from MP #4. Photo date: 03/09/2018

Photographs



**Picture 14:** Inlet of 12" diameter relief culvert located at MP #5. Photo date: 03/09/2018



## Photographs



**Picture 15:** Damaged outlet of the 12" diameter relief culvert located at MP #5. This location shall be upgraded to a minimum 15" diameter culvert and installed per attached specifications. Photo date: 03/09/2018



## Photographs



**Picture 16:** Inlet of 24" diameter Stream Crossing #1. This crossing is located where an unnamed Class II watercourse intersects with a permanent road. Photo date: 03/09/2018



## Photographs



**Picture 17:** Outlet of 24" diameter Stream Crossing #1. The outlet has been driven over multiple times. The Discharger shall upgrade this crossing to a minimum 36" diameter culvert (metal or plastic). Photo date: 03/09/0218.

## Photographs



**Picture 18:** Inlet of 24" diameter Stream Crossing #2. This photograph was taken up stream of SC #2 approximately where the two watercourses converge. Surface water can be seen in the bottom center of this picture at the feet of the photographer. Photo date: 03/09/2018.



## Photographs



**Picture 19:** Outlet of 24" diameter Stream Crossing #2. The low rust line in the pipe lends evidence to the average annual flow level. Photo date: 03/09/2018

## Photographs



**Picture 20:** View of the outlet of SC #2 looking up from the inlet of SC #1. In the event that SC #2 either plugs with debris or backs up due to excess surface flow, water will flow around the garage and back into the channel due to topography. Photo date: 03/09/2018.



## Photographs



**Picture 21:** Fertilizers and pesticides are stored in plastic totes within the enclosed garage. The cement foundation prevents materials from leaching into surface and/or groundwater. Photo date: 03/09/2018

## Photographs



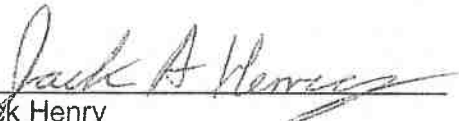
**Picture 22:** Fuel is stored on the property in 5 gallon plastic hand canisters which are also stored in plastic totes for additional protection. These totes are stored within the garage. Photo date: 03/09/2018.



# STATEMENT OF CONTINGENT AND LIMITING CONDITIONS CONCERNING THE PREPARATION AND USE OF WATER RESOURCE PROTECTION PLAN

## Prepared by Timberland Resource Consultants

1. This Water Resource Protection Plan has been prepared for the property within APN 095-201-005 in Humboldt County, at the request of the Client.
2. Timberland Resource Consultants does not assume any liability for the use or misuse of the information in this Water Resource Protection Plan.
3. The information is based upon conditions apparent to Timberland Resource Consultants at the time the inspection was conducted, and as disclosed to Timberland Resource Consultants by the landowner and/or Discharger. Changes due to land use activities or environmental factors occurring after this inspection, have not been considered in this Water Resource Protection Plan.
4. Maps, photos, and any other graphical information presented in this report are for illustrative purposes. Their scales are approximate, and they are not to be used for locating and establishing boundary lines.
5. The conditions presented in this Water Resource Protection Plan may differ from those made by others or from changes on the property occurring after the inspection was conducted. Timberland Resource Consultants does not guarantee this work against such differences.
6. Timberland Resource Consultants did not conduct an investigation on a legal survey of the property.
7. Persons using this Water Resource Protection Plan are advised to contact Timberland Resource Consultants prior to such use.
8. Timberland Resource Consultants will not discuss this report or reproduce it for anyone other than the Client named in this report without authorization from the Client.



Jack Henry  
Timberland Resource Consultants

# **Attachments**

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**Supplemental Information, Diagrams, Best Management Practices**



File Original with DWR

State of California

# Well Completion Report

DWR Use Only - Do Not Fill In

Page 1 of 1

Refer to Instruction Pamphlet No. 00000000

Owner's Well Number \_\_\_\_\_

State Well Number/State Number \_\_\_\_\_

Date Work Began 06/17/17 Date Work Ended 06/27/17

Latitude \_\_\_\_\_ N \_\_\_\_\_ W  
Longitude \_\_\_\_\_

Local Permit Agency Humboldt County Division of Environmental Health

Permit Number 16/17-1127 Permit Date 05/15/17

APN/TRS/Other \_\_\_\_\_

### Geologic Log

Orientation		Specify
<input type="radio"/> Vertical	<input type="radio"/> Horizontal	<input type="radio"/> Angle _____
Drilling Method _____		Drilling Fluid _____
Depth from Surface	Description	
Feet to Feet	Describe material, grain size, color, etc.	
0 to 15	BROWN ROCK	
15 to 25	BROWN SILT	
25 to 30	BROWN CLAY	
30 to 35	GREY SHELL	
35 to 40	BROWN SHELL/ROCK	
40 to 45	CLAY/BROWN ROCK	
45 to 50	GREY SHELL	
50 to 55	BROWN SHELL/ROCK	
55 to 60	BROWN SHELL/ROCK	
60 to 120	GREY SHELL	
120 to 135	WHITE ROCK	
135 to 160	GREY/BLACK SHELL	

### Well Owner

Name \_\_\_\_\_  
 Mailing Address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

### Well Location

Address \_\_\_\_\_  
 City WEOTT County Humboldt  
 Latitude \_\_\_\_\_ N Longitude \_\_\_\_\_ W  
 Datum \_\_\_\_\_ Dec. Lat. \_\_\_\_\_ Dec. Long. \_\_\_\_\_  
 APN Book 095 Page 201 Parcel 005  
 Township \_\_\_\_\_ Range \_\_\_\_\_ Section \_\_\_\_\_

### Location Sketch



### Activity

- New Well
- Modification/Repair
  - Deepen
  - Other \_\_\_\_\_
- Destroy  
Describe procedure and materials under 'GEOLOGIC LOG'

### Planned Uses

- Water Supply
  - Domestic  Public
  - Irrigation  Industrial
- Cathodic Protection
- Dewatering
- Heat Exchange
- Injection
- Monitoring
- Remediation
- Sparging
- Test Well
- Vapor Extraction
- Other \_\_\_\_\_

RECEIVED

JUN 28 2017

HUMBOLDT COUNTY DIVISION OF ENVIRONMENTAL HEALTH

Total Depth of Boring 160 Feet  
 Total Depth of Completed Well 160 Feet

### Water Level and Yield of Completed Well

Depth to first water 60' (Feet below surface)  
 Depth to Static \_\_\_\_\_  
 Water Level 90' (Feet) Date Measured 06/26/17  
 Estimated Yield \* 4 (GPM) Test Type Air Lift  
 Test Length 4.0 (Hours) Total Drawdown \_\_\_\_\_ (Feet)  
 \*May not be representative of a well's long term yield.

Casings						Annular Material				
Depth from Surface	Borehole Diameter	Type	Material	Wall Thickness	Outside Diameter	Screen Type	Slot Size if Any	Depth from Surface	Fill	Description
Feet to Feet	(Inches)			(Inches)	(Inches)		(Inches)	Feet to Feet		
20	6"		Low Carbon Steel	1/4"	6 5/8"			130	Bentonite	Bentonite Chips

### Attachments

- Geologic Log
- Well Construction Diagram
- Geophysical Logs
- Soil/Water Chemical Analyses
- Other \_\_\_\_\_

### Certification Statement

I, the undersigned, certify that this record is complete and accurate to the best of my knowledge and belief.  
 Name AD Drilling  
 Person Firm or Corporation  
 P.O. Box 1285 Rock Springs WY 82902  
 Address City State Zip  
 Signed \_\_\_\_\_ Date Signed 06/27/17  
 (Print Name and Title) (Date) (C-ST License Number)

### Hydrologic Study/Culvert Sizing

The permanent culvert upgrades have been sized for 100-year flood flow utilizing methods recommended in "Designing Watercourse Crossings for Passage of 100-year Flood Flows, Wood, and Sediment". 2004 Peter Cafferata, Thomas Spittler, Michael Wopat, Greg Bundros, and Sam Flanagan. This report recommends that the rational method be limited to watersheds less than 200 acres. The FAA Airport Drainage formula was utilized to estimate time of concentration.

$$T_c = ((1.8)(1.1 - C)(D^{0.5}))/S^{0.33}$$

$$T_c = ((1.8)(1.1 - 0.35)(1820^{0.5}))/43^{0.33}$$

$$T_c = 16.7$$

The 100-year Return-Period precipitation data for a 15 minute period is from:

[http://hdsc.nws.noaa.gov/hdsc/pfds/pfds\\_map\\_cont.html?bkmrk=ca](http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=ca)

$T_c = 60((11.9 \times L^3)/H)^{0.385}$				$Q_{100} = CIA$			
Crossing	Channel length (to top of basin) (mi) L	Elevation difference (ft) H	Concentration time (min) T <sub>c</sub>	Runoff coefficient C	100-year Return-Period Precipitation (in/hr) I*	Area (acres) A	100-yr flood flow (cfs) Q <sub>100</sub>
1				0.35	2	31	21.7
2				0.35	2	30	21.0

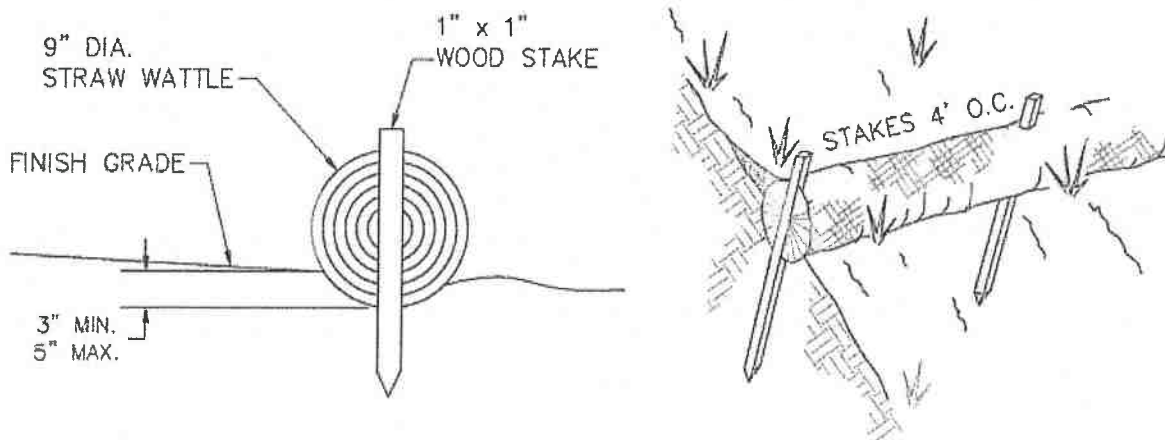
HW/D	CU18	CU24	CU30	CU36	CU42	CU48	CU54	CU60	CU72	CU84	CU96
1.0	5.6	11.6	20	32	47	66	89	115	180	265	375
1.1	6.4	13	23	35	53	75	99	128	200	300	425
1.2	7	14.5	25	40	59	83	109	141	230	330	475
1.3	7.9	16.5	28	44	64	90	120	158	250	370	520
1.4	8.2	16.7	30	46	68	96	125	165	260	390	545
1.5	8.9	18	32	50	72	101	135	178	290	420	590

The recommended minimum culvert sizes listed here are based on the premise that each culvert should pass a design flow without allowing the inlet to become submerged. Therefore, the proposed culvert sizes specified in this document are based upon a headwall height to diameter ratio of 1.



### BMP: Erosion Control

- Erosion control and sediment detention devices and materials shall be incorporated into the cleanup/restoration work design and installed prior to the end of project work and before the beginning of the rainy season. Any continuing, approved project work conducted after October 15 shall have erosion control works completed up-to-date and daily.
- Erosion control materials shall be, at minimum, stored on-site at all times during approved project work between May 1 and October 15.
- Approved project work within the 5-year flood plain shall not begin until all temporary erosion controls (straw bales or silt fences that are effectively keyed-in) are installed downslope of cleanup/restoration activities.
- Non-invasive, non-persistent grass species (e.g., barley grass) may be used for their temporary erosion control benefits to stabilize disturbed slopes and prevent exposure of disturbed soils to rainfall.
- Upon work completion, all exposed soil present in and around the cleanup/restoration sites shall be stabilized within 7 days.
- Soils exposed by cleanup/restoration operations shall be seeded and mulched to prevent sediment runoff and transport.
- Straw Wattles (if used) shall be installed with 18 or 24 inch wood stakes at four feet on center. The ends of adjacent straw wattles shall be abutted to each other snugly or overlapped by six inches. Wattles shall be installed so that the wattle is in firm contact with the ground surface.



## BMP Water Break/ Water Bar

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

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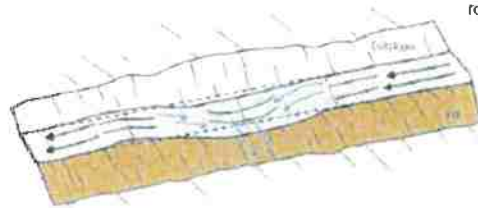




## BMP: Rolling Dip

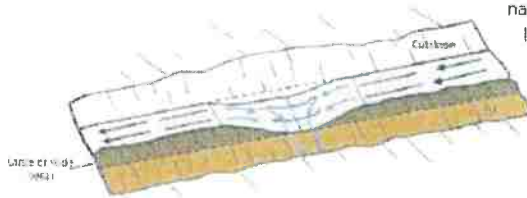
- Rolling dips are drainage structures designed to capture and discharge surface water collected on road surfaces and in inside ditches at a specific location.
- The road shall dip into and out of the rolling dip to eliminate the possibility of water flowing along the road surface or in an inside ditch to bypass the dip structure.
- The rolling dip shall be constructed with clean native materials.
- The rolling dips outlet may be armored to resist downcutting and erosion.
- Do not discharge rolling dips into swales that show signs of instability or active landsliding.
- If the rolling dip is designed to divert both road surface and ditch runoff, block the down-road ditch with compacted fill.

Type 1 Rolling Dip  
(Standard)



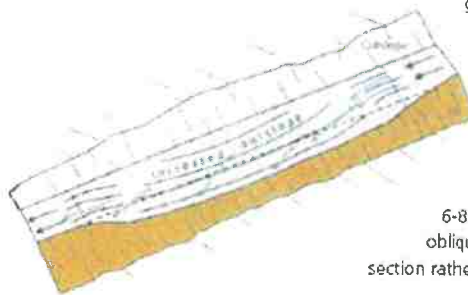
Type 1 rolling dips are used where road grades are less than about 12-14% and road runoff is not confined by a large through cut or berm. The axis of the dip should be perpendicular to the road alignment and sloped at 3-4% across the road tread. Steep roads will have longer and more abrupt dip dimensions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

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



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

Type 3 Rolling Dip  
(Steep road grade)



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

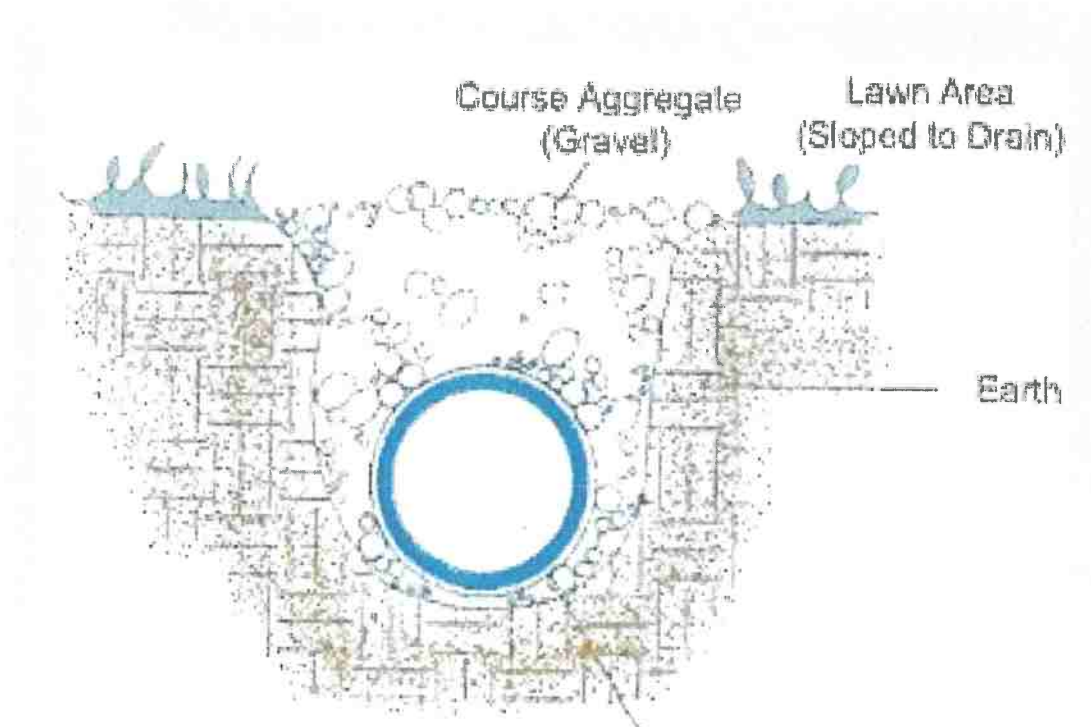
Instead of relying on the dip's grade reversal to turn runoff off the roadbed, the road is built with an exaggerated outslope of 6-8% across the dip axis. Road runoff is deflected obliquely across the dip axis and is shed off the outsloped section rather than continuing down the steep road grade.

FIGURE 36. Rolling dip types

HANDBOOK FOR FOREST, RANCH AND RURAL ROADS

## BMP: French Drain System

- Trench dimensions should be minimum 8 inches wide by 18 inches deep
- Set trench grade to a maximum 12:1/4 inches or minimum 12:1/8 inches (horizontal:vertical)
- Line trench with filter fabric and allow slack to cover the top of the trench
- Lay base layer of coarse aggregate at least 1 inch thick
- Install minimum 4" diameter perforated pipe
  - Ensure perforations are pointing DOWN for correct function
  - Do not use corrugated pipe as it catches sediment and eventually clogs the system quicker
  - Optional: Install vertical "clean-out" at the beginning of each pipe. These vertical access points allow for easy maintenance of the system. Ensure they are above grade and capped to prevent sediment entry.
- Fill trench with coarse aggregate leaving 2 inches of freeboard within trench
- Use slack fabric to completely enclose gravel and pipe with filter fabric
- For surface water drainage, cover remaining 2" of trench with coarse aggregate. For groundwater drainage, cover remaining 2" of trench with loosely packed fill
- Outlet runoff at safe location where concentrated flows will not destabilize slopes or cause sediment delivery to a watercourse. Use Tee caps, rocked catchments, and/or native plantings to dissipate energy when necessary.



**French Drain**

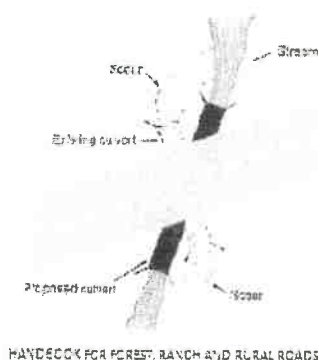
Drain Pipe Wrapped With Filter Cloth and Sloped For Drainage

**French Drain (Nusite Waterproofing, 2012)**



## BMP: Permanent Culvert Crossing

- New culvert installations shall be sized to accommodate flows associated with a 100-year storm event.
- If the new culvert is replacing a poorly installed old culvert, the crossing may need to be abandoned to the following standard:
  - When fills are removed they shall be excavated to form a channel that is as close as feasible to natural watercourse grade and orientation, and that is wider than the natural channel.
  - Excavated banks shall be laid back to a 2:1 (50%) or natural slope.
- New culverts shall be placed at stream gradient, or have downspouts, or have energy dissipaters at outfall.
  - Align culverts with the natural stream channel orientation to ensure proper function, prevent bank erosion, and minimize debris plugging. See Figure 97 below.
  - Place culverts at the base of the fill and at the grade of the original streambed or install a downspout past the base of the fill. Downspouts should only be installed if there are no other options.
  - Culverts should be set slightly below the original stream grade so that the water drops several inches as it enters the pipe.
  - Culvert beds should be composed of rock-free soil or gravel, evenly distributed under the length of the pipe.
  - Compact the base and sidewall material before placing the pipe in its bed.
  - Lay the pipe on a well-compacted base. Poor basal compaction will cause settling or deflection in the pipe and can result in separation at a coupling or rupture in the pipe wall.
  - Backfill material should be free of rocks, limbs, or other debris that could dent or puncture the pipe or allow water to seep around the pipe.
  - Cover one end of the culvert pipe, then the other end. Once the ends are secure, cover the center.
  - Tamp and compact backfill material throughout the entire process, using water as necessary for compaction.
  - Backfill compacting will be done in 0.5 – 1.0 foot lifts until 1/3 of the diameter of the culvert has been covered.
  - Push layers of fill over the crossing to achieve the final design road grade, road fill above the culvert should be no less than one-third to one-half the culvert diameter at any point on the drivable surface.
- Critical dips shall be installed on culvert crossings to eliminate diversion potential. Refer to Figure 84 below.
- Road approaches to crossings shall be treated out to the first drainage structure (i.e. waterbar, rolling dip, or hydrologic divide) to prevent transport of sediment.
- Road surfaces and ditches shall be disconnected from streams and stream crossings to the greatest extent feasible. Ditches and road surfaces that cannot be feasible disconnected from streams or stream crossings shall be treated to reduce sediment transport to streams.
- If downspouts are used, they shall be secured to the culvert outlet and shall be secure on fill slopes.
- Culverts shall be long enough so that road fill does not extend or slough past the culvert ends.
- Inlet of culverts, and associate fill, shall be protected with appropriate measures that extend at least as high as the top of the culvert.
- Outlet of culverts shall be armored with rock if road fill sloughing into channel can occur.
- Armor inlets and outlets with rock, or mulch and seed with grass as needed (not all stream crossings need to be armored).
- Where debris loads could endanger the crossing, a debris catchment structure shall be constructed upstream of the culvert inlet.
- Bank and channel armoring may occur, when appropriate, to provide channel and bank stabilization.



**FIGURE 97.** Culvert alignment should be in relation to the stream and not the road. It is important that the stream enters and leaves the culvert in a relatively straight horizontal alignment so streamflow does not have to turn to enter the inlet or discharge into a bank as it exits. This figure shows a redesigned culvert installation that replaces the bending alignment that previously existed. Channel turns at the inlet increase plugging potential because wood going through the turn will not align with the inlet. Similarly, channel turns at the bank and outlet are often accompanied by scour against the channel banks (Wisconsin Transportation International Center, 2004).

## BMP: Permanent Culvert Crossing (Cont.)

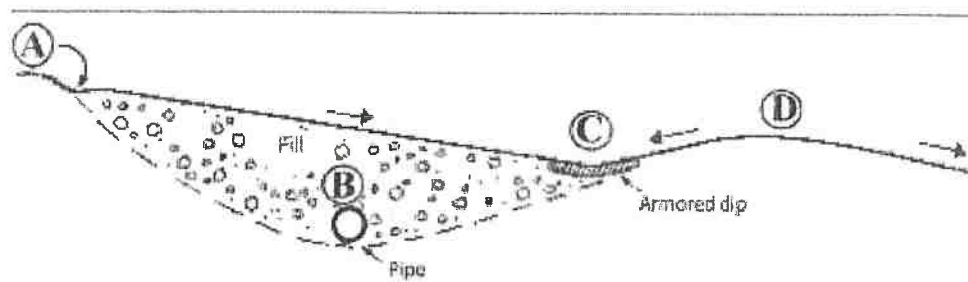
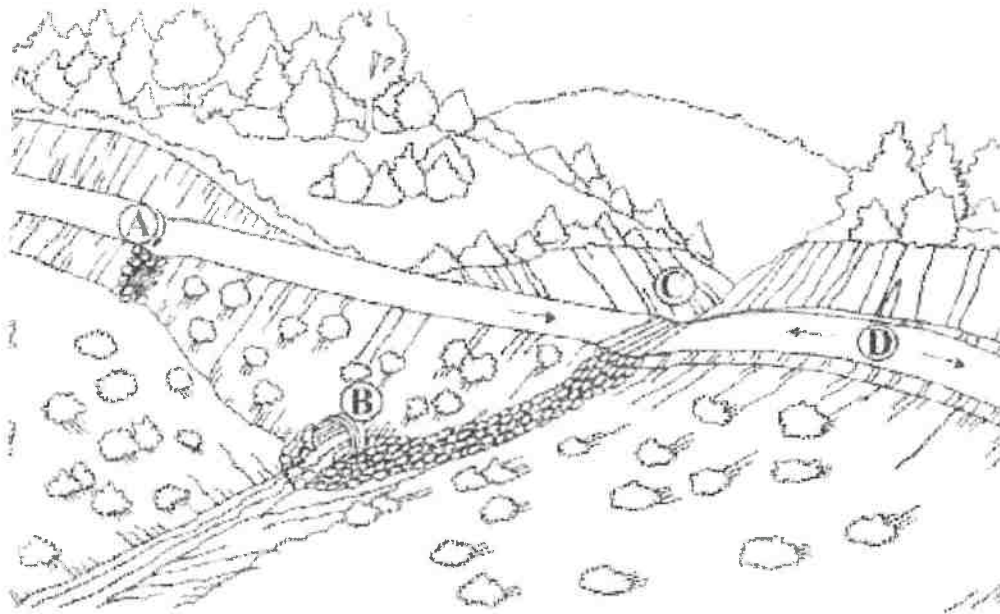
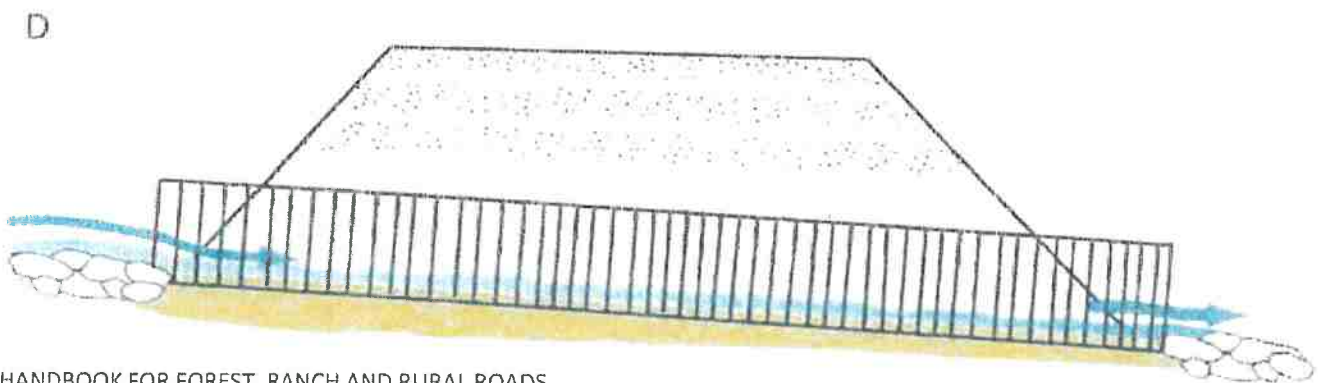
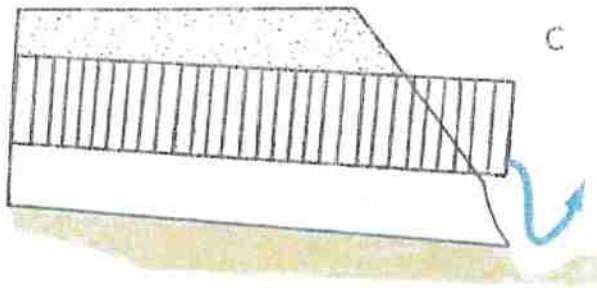
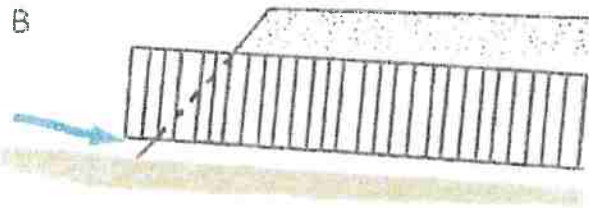


FIGURE 84. Critical dips or dipped crossing fills should be centered near a stream crossing's down-road hinge line, not over the centerline of the crossing where overtopping could cause washout or severe erosion of the fill. If the stream crossing culvert (B) plugs, water will pond behind the fill until reaching the critical dip or low point in the crossing (C) and flowing back down into the natural stream channel. The down-road ditch must be plugged to prevent streamflow from diverting down the ditch line. For extra protection in this sketch, riprap armor has been placed at the critical dip outfall and extending downslope to the stream channel. This is only required or suggested on stream crossings where the culvert is highly likely to plug and the crossing fill overtopped. The dip at the hinge line is usually sufficient to limit erosion damage during an overtopping event. Road surface and ditch runoff is disconnected from the stream crossing by installing a rolling dip and ditch relief culvert just up-road from the crossing (A) (Keller and Sherar, 2003).

HANDBOOK FOR FOREST, RANCH AND RURAL ROADS

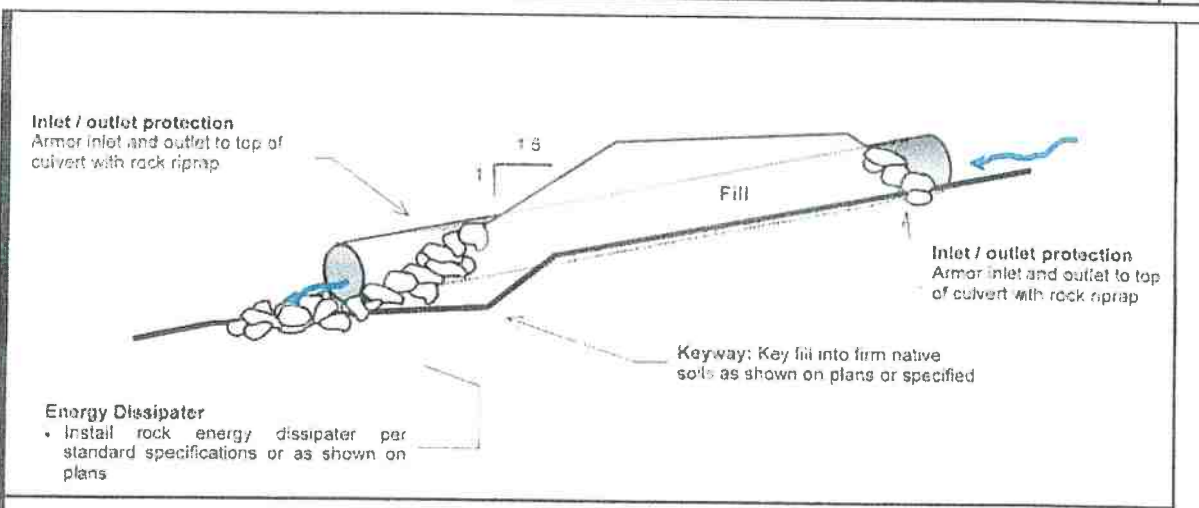
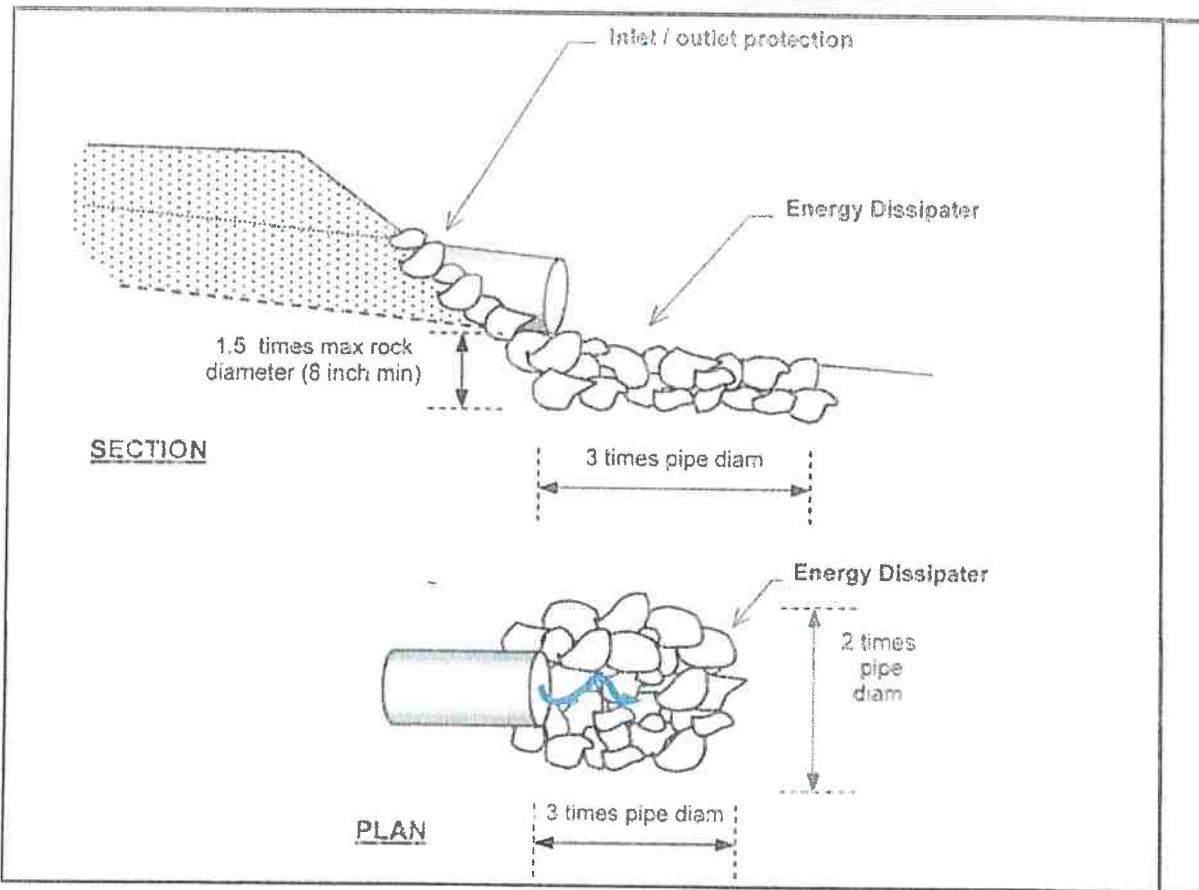


## BMP: Permanent Culvert Crossing (Cont.)



**FIGURE 155** Proper culvert installation involves correct culvert orientation, setting the pipe slightly below the bed of the original stream, and backfilling and compacting the fill as it is placed over the culvert. Installing the inlet too low in the stream (A) can lead to culvert plugging, yet if set too high (B) flow can undercut the inlet. If the culvert is placed too high in the fill (C), flow at the outfall will erode the fill. Placed correctly (D), the culvert is set slightly below the original stream grade and protected with armor at the inlet and outlet. Culverts installed in fish-bearing stream channels must be inset into the streambed sufficiently (>25% embedded) to have a natural gravel bottom throughout the culvert (Modified from: MDSL, 1991).

## BMP: Culvert Rock Armoring Specifications



*Riprap installed to protect the inlet and outlet of a stream crossing culvert from erosion or for energy dissipation should be keyed into the natural channel bed and banks to an approximate depth of about 1.5x the maximum rock thickness. Riprap should be placed at least up to the top of the culvert at both the inlet and outlet to protect them from splash erosion and to trap any sediment eroded from the newly constructed fill slope above.*



**ENROLLMENT NOTICE OF INTENT FORM  
FOR  
WAIVER OF WASTE DISCHARGE REQUIREMENTS  
ORDER NUMBER R1-2015-0023**

Submission of this Notice of Intent (NOI) to the North Coast Regional Water Quality Control Board (Regional Water Board) or an approved third party constitutes notice that a discharger, identified in Section I of this form, requests and receives authorization to discharge pursuant to the Waiver of Waste Discharge Requirements Order number R1-2015-0023 (Order). Upon submittal of the NOI, waste discharges are authorized pursuant to the conditions of the Order. Order coverage is required for existing Tier 1, 2, and 3 cultivation sites by February 15, 2016. Dischargers who begin operations after February 15, 2016, must file an NOI prior to commencement of cultivation activities.

To obtain authorization, dischargers must complete and submit this NOI form, encompassing sections I and II, complete and submit the reporting information required in Appendix C of the Order, and submit the appropriate fee. The reporting form in Appendix C must be submitted annually by March 31 thereafter and an annual fee is subject to a separate invoicing from the State Water Board. Any additional documentation required by the Order, such as a water resource protection plan, site map, and monitoring records must be completed and secured on-site, to be made available upon request by the Regional Water Board. This NOI form must be submitted upon enrollment and the discharger shall amend and resubmit the NOI within 30 days of changed site conditions that result in a change in Tier status.

Completed forms shall be signed and submitted to the Regional Water Board or an approved third party.

**I. Discharger Information**

**John Zartarian  
407 N. Sunny Lane  
#223  
Weott, CA 95571  
760-917-9901  
johnzartarian@gmail.com**

**II. Site Information**

**Located in Humboldt County, Assessor's Parcel Numbers (APN):  
095-201-005**

**Subwatershed (Huc-12)  
180101060407**