

# Water Resource Protection Plan

**WDID#: 1B16428CHUM**

**TRC ID#: 180101020102TRC35**

*Submitted to:*

**Jason Kidd**

*Prepared by:*

**Timberland Resource Consultants**

**165 South Fortuna Blvd**

**Fortuna, CA 95540**

**08-21-2016**

**Purpose**

This Water Resource Protection Plan (WRPP) has been prepared on behalf of the property owner, Jason Kidd, for APN 316-174-010 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.

**Property Description**

This project consists of a 41 acre parcel which includes a residence and associated cannabis cultivation. The property contains two Class II tributaries to Windy Creek, a Class II tributary of Redwood Creek. The property is located within the SE ¼ of Section 24, Township 6N, Range 3E, Humboldt County.

**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.

**Assessment of Standard Conditions**

Assessment of Standard Conditions consisted of field examinations in 12/03/2015. The examination evaluated areas near, and areas with the potential to directly impact, watercourses for sensitive conditions including, but 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

### 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.
  - b. Roads, driveways, trails, and other defined corridors for foot or vehicle traffic of any kind shall have adequate ditch relief drains or rolling dips and/or other measures to prevent or minimize erosion along the flow paths and at their respective outlets.
  - c. Roads and other features shall be maintained so that surface runoff drains away from potentially unstable slopes or earthen fills. Where road runoff cannot be drained away from an unstable feature, an engineered structure or system shall be installed to ensure that surface flows will not cause slope failure.
  - d. Roads, clearings, fill prisms, and terraced areas (cleared/developed areas with the potential for sediment erosion and transport) shall be maintained so that they are not hydrologically connected<sup>1</sup>, as feasible, from surface waters, including wetlands, ephemeral, intermittent and perennial streams.
  - e. Ditch relief drains, rolling dip outlets, and road pad or terrace surfaces shall be maintained to promote infiltration/dispersal of outflows and have no apparent erosion or evidence of soil transport to receiving waters.
  - f. Stockpiled construction materials are stored in a location and manner so as to prevent their transport to receiving waters.

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<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))



An assessment of the driveways, trails and other corridors throughout the property found them intact and well maintained. There are two erosion control points (ECP) where potential erosion can be prevented by the Discharger.

- ECP #1: The Discharger has been developing a permitted <3 acre conversion on the property. This has generated a large area of exposed soil capable of sediment transportation during the wet season. The Discharger plans to mitigate this potential transportation by mulching and seeding all exposed soils within the conversion boundaries.
- ECP #2: The spillway leading from the newly constructed off-stream pond is incomplete and may become a source for sediment discharge if not fixed before October 15<sup>th</sup>. This spillway requires rock armoring in order to protect the fill slope of the pond and water quality of overflow. The Discharger will install rock armoring per specifications attached with this document. If the Discharger cannot acquire the services of a machine operator to rock armor the spillway by winter then it is possible to install a temporary spillway. This off-stream pond drains an area approximately 0.5 acres and can expect a maximum storm flow of 0.8 cfs. A temporary solution would consist of an 8" diameter plastic flex pipe which could transport overflow from the pond safely to the Class II watercourse below.

Cultivation Site #2 (CS #2) is within a 100 foot riparian buffer and potentially hydrologically connected with a watercourse. Although this cultivation site had no signs of sediment discharge to the watercourse, the site will be abandoned and restored. This condition is further addressed in standard condition (A)3. The other cultivation sites are not hydrologically connected with any watercourses.

Physical reconnaissance of the property revealed no unstable areas per 14CCR 895.1. All construction materials were found organized and stored near the residence away from watercourses.

## 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>

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<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.

- 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>

There is one stream crossing (SC #1) located on the property. This crossing is an existing 8" diameter CPP. The Discharger will upgrade this stream crossing to a minimum 18" diameter culvert (plastic or metal). Stream crossing installations will be done per specifications attached to this document.

**Rational Method for 100-year flood flow (A < 200 acres)      WIDID#: 1B16428CHUM**

$T_c = 60((11.9 \times L^3)/H)^{0.385}$				$Q_{100} = CIA$			
Crossing	Channel length (to top of basin) (mi) L	Elevation difference (ft) H	Concentration time (min) Tc	Runoff coefficient C	100-year Return-Period Precipitation (in/hr) I*	Area (acres) A	100-yr flood flow (cfs) Q100
1				0.35	4.308	0.12	0.2

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

**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.
- b. Buffers shall be maintained at natural slope with native vegetation.
- c. Buffers shall be of sufficient width to filter wastes from runoff discharging from production lands and associated facilities to all wetlands, streams, drainage ditches, or other conveyances. 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.

**There is one cultivation site (CS #2) which encroaches within a Class II riparian buffer. The larger outdoor site a part of CS #2 contains cultivation located 90 feet away from a Class II watercourse. Cultivation actions at this site show little impact on the slope and**

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

<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.

only altered native vegetation. The Discharger will restore the value of this riparian buffer by removing all cultivation and related materials from this site as well as reestablish vegetation within the buffer.

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

**The Discharger plans to contain and cover all spoils within the greenhouse footprints located at Cultivation Site #1 over winter. This location has a gentle slope and is over 150' from the nearest watercourse.**

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.
- b. Water conservation measures shall be implemented. Examples include use of rainwater catchment systems or watering plants with a drip irrigation system rather than with a hose or sprinkler system.
- c. For Tier 2 Dischargers, if possible, develop off-stream storage facilities to minimize surface water diversion during low flow periods.
- d. Water is applied using no more than agronomic rates.<sup>7</sup>
- e. Diversion and/or storage of water from a stream should be conducted pursuant to a valid water right and in compliance with reporting requirements under Water Code section 5101.
- f. Water storage features, such as ponds, tanks, and other vessels shall be selected, sited, designed, and maintained so as to insure integrity and to prevent release into waters of the state in the event of a containment failure.

**This project consists of three cultivation sites (CS) totaling 22,790 square feet.**

- **CS #1 is a developed landing constructed per CalFire conversion exemption. The slope averages 15%. The site includes three greenhouses: 27' by 100', 27' by 70' and**

<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.

<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.



- 20' by 60'. The site also includes approximately 7,500 square feet of outdoor cultivation.
- CS #2 is an undeveloped vegetated hillside containing approximately 8,500 square feet of outdoor cultivation. The slope of this site averages approximately 26%. A portion of this site encroaches within a Class II riparian buffer and is addressed in Standard Condition (A)3.
  - CS #3 is a single greenhouse atop a developed terrace. This greenhouse measures 20' by 60' and the slope is approximately 28%.

The Discharger's current agricultural and domestic water source is a surface diversion located on the property. This point of diversion (POD) consists of a screened ¾ inch poly pipe within the channel of an unnamed Class II watercourse. This watercourse is a tributary to Windy Creek. The maximum rate of diversion for this diversion is 5 gallons per minute or no greater than 20% of the instream flow.

The applicant plans to forbear from surface diversions for 150 days. The Discharger estimates using 1 gallon of water per ten square feet of cultivation area. This would equate to 2,200 gallons per day or 330,000 gallons of stored water for the forbearance period. An engineered off-stream pond was constructed in 2016. The pond holds an approximate 178,000 gallons and will fill with rain water. The Discharger is also on a wait list to have a well drilled in order to supplement the remaining 152,000 gallons of water needed to irrigate.

An Initial Statement of Water Diversion and Use has been filed with the State Water Control Board (ID#: S025320) and the Discharger is waiting to apply for a Small Irrigation Use Registration once available. The Discharger has an approved Lake and Stream Bed Alteration agreement with California Department of Fish and Wildlife for the diversion structures and jurisdictional activities, 1600-2015-0543-R1. The Discharger plans to shift agricultural water use from the POD to a combination of the rain catchment pond and proposed well. This irrigation strategy will not require a Small Irrigation Use Registration.

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.

**The Discharger utilizes a drip system to irrigate the cultivation sites. No evidence of irrigation runoff was found during the site assessment.**

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.
- b. Fertilizers and soil amendments shall be applied and used per packaging instructions and/or at proper agronomic rates.
- c. Cultivation areas shall be maintained so as to prevent nutrients from leaving the site during the growing season and post-harvest.

**The Discharger stores all fertilizers and amendments within a 20 foot by 10 foot canvas tent cabin located adjacent to the residence. This location adequately protects from weather conditions and is approximately 190 feet from the nearest watercourse. The Discharger irrigates per specifications on attached labels.**

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.

**Currently the Discharger is using Azitrol and Spinosad. Pesticides are stored with the fertilizers and amendments addressed in Standard Condition (A)7.**

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.
- b. Above ground storage tanks and containers shall be provided with a secondary means of containment for the entire capacity of the largest single container and sufficient freeboard to contain precipitation.



- c. Dischargers shall ensure that diked areas are sufficiently impervious to contain discharged chemicals.
- d. Discharger(s) shall implement spill prevention, control, and countermeasures (SPCC) and have appropriate cleanup materials available onsite.
- e. Underground storage tanks 110 gallons and larger shall be registered with the appropriate County Health Department and comply with State and local requirements for leak detection, spill overflow, corrosion protection, and insurance coverage.

**The Discharger temporarily stores small amounts, 10-20 gallons, of gasoline on the property. This fuel is stored in 5-10 gallon plastic canisters which are stored around the residence and within the canvas tent mentioned in standard condition A.7. The Discharger shall store fuel canisters in plastic tubs within the canvas tent.**

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 groundwaters.

**Cultivation waste is treated with in two separate manners depending on the waste. Organic matter is piled, covered and eventually burned on a flat location near the residence. Non-organic waste such as packaging and used materials are contained within trash bins and hauled off-site to a solid waste disposal site.**

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.
- b. Refuse and garbage shall be stored in a location and manner that prevents its discharge to receiving waters and prevents any leachate or contact water from entering or percolating to receiving waters.
- c. Garbage and refuse shall be disposed of at an appropriate waste disposal location.

**All trash is temporarily contained within trash bins and stored near the residence. Trash is hauled to a solid waste disposal site on average once per month. The Discharger dumps waste at either the Hawthorne Street Transfer Station in Eureka, CA or Humboldt Sanitation & Recycling in McKinleyville, CA.**

**Human refuse is collected and contained within a privy located on the property. This pit toilet is approximately 180 feet away from the nearest Class II watercourse. The**

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



**Discharger is in the process of applying for a Humboldt County cultivation license and plans to install a septic system compliant with county health code.**

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

**Mitigation Report (Identified Sites Requiring Remediation)**

*\*Time schedule for treatment accounts for appropriate permit approvals and allowed season of operations per state and local regulations.*

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
ECP 1	>1 acre of unsurfaced dirt around CS #1	(A)1a (A)1b	Straw mulch area	Seed all open space per attached specifications	1	10/15/16	
ECP 2	Pond overflow requires adequate rock armor	(A)1a (A)1b	Install 8" diameter flex culvert within spillway	Rock armor spillway	1	10/15/17	
SC 1	Undersized 12" CMP on a Class III watercourse	(A)2a-f	N/A	Upgrade to minimum 18" diameter culvert	2	10/15/17	
Riparian Buffer Encroachment	Cultivation <100 feet from Class II watercourse	(A)3a-c	Remove Cultivation	Restore riparian vegetation	2	10/15/17	
None Given	Lack of enough storage for 150 forbearance season	(A)5c	N/A	Install well or enough storage for 150 day forbearance	3	05/15/17	
Fuel Storage	Fuel canisters with no secondary containment	(A)9b	N/A	Install Secondary Containment	1	10/15/16	
OWTS	Pit toilet on property is only OWTS	(A)11a	Monitor surface run-off near pit toilet	Install septic system compliant with applicable county health standards	4	02/26/21	

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).



**Photographs**



**Picture 1 + 2:** These are photographs of ECP #1. This exposed bare mineral earth occurs throughout Cultivation Site #1. This site will be straw mulched and seeded to mitigate potential erosion. Photo date: 08/11/2016



## Photographs



**Picture 3 + 4:** These are photographs of ECP #2. The Discharger will install an 8" diameter plastic flex pipe for the winter of 2016-17. Rock armoring shall be installed in 2017 when machine operations resume. Photo date: 08/11/2016



## Photographs



**Picture 5:** This is a photograph of Cultivation Site #2 encroaching on the Class II riparian buffer. The Discharger plans to abandon this site immediately. The Class II watercourse is approximately 90 feet downhill from the right side of this image. This area consists of 7,600 square feet of outdoor cultivation. Photo date: 08/11/2016



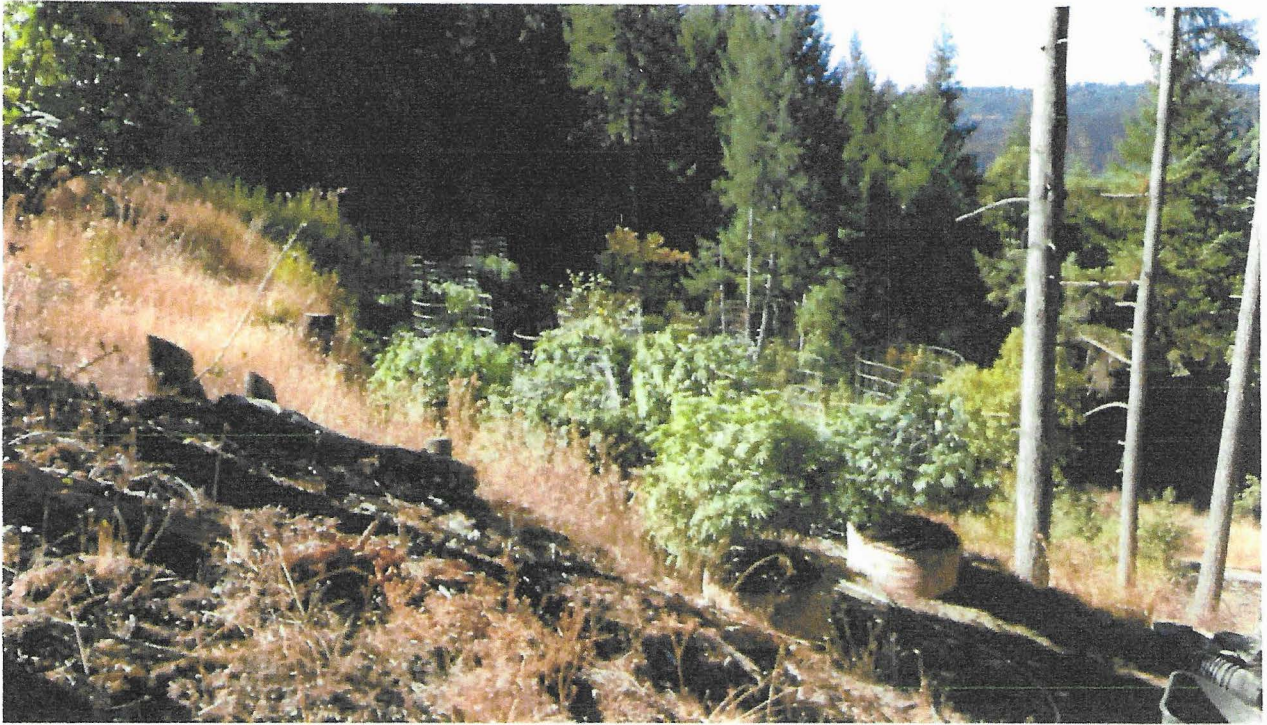
**Photographs**



**Picture 7 + 8:** These are photographs of Cultivation Site #1. This site includes outdoor cultivation as well as greenhouse cultivation.. Photo date: 08/11/2016



**Photographs**



**Picture 6:** This is a photo of the upper terrace which is a part of Cultivation Site #2. This terrace is approximately 900 square feet. Picture 2 is a photograph of the lower, larger, part of Cultivation Site #2. Photo date: 08/11/2016.

**Photographs**



**Picture 7:** This is a picture of the greenhouse which makes up Cultivation Site #3. This greenhouse measures 20 feet by 60 feet. Photo date: 08/11/2016.



## Photographs



**Picture 8:** This is a photograph of the off-stream pond located on the property. At the time of this photograph the eastern edge was in disrepair however the landowner has repaired this and anchored the pond liner. The pond is approximately 73 feet long and 68 feet across holding an approximate 170,000 gallons. Photo date: 08/11/2016



**Photographs**



**Picture 9:** This is a photograph of the point of diversion (POD) and upstream above it. This diversion is a screened  $\frac{3}{4}$  inch poly pipe within a Class II watercourse. Photo date 12/02/2015



Photographs



**Picture 10:** This is a picture facing downstream from POD. Photo date: 12/02/2015

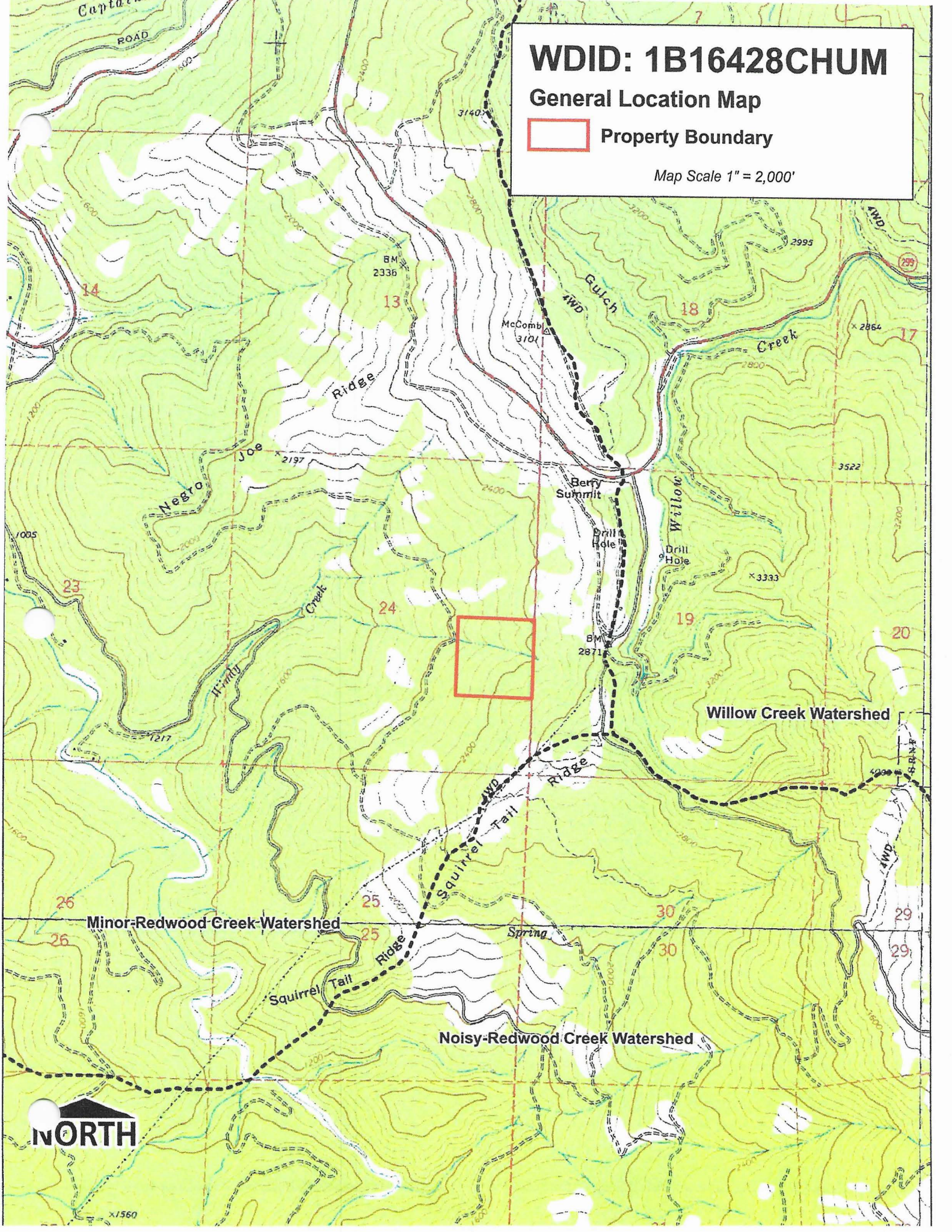


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**General Location Map**

 **Property Boundary**

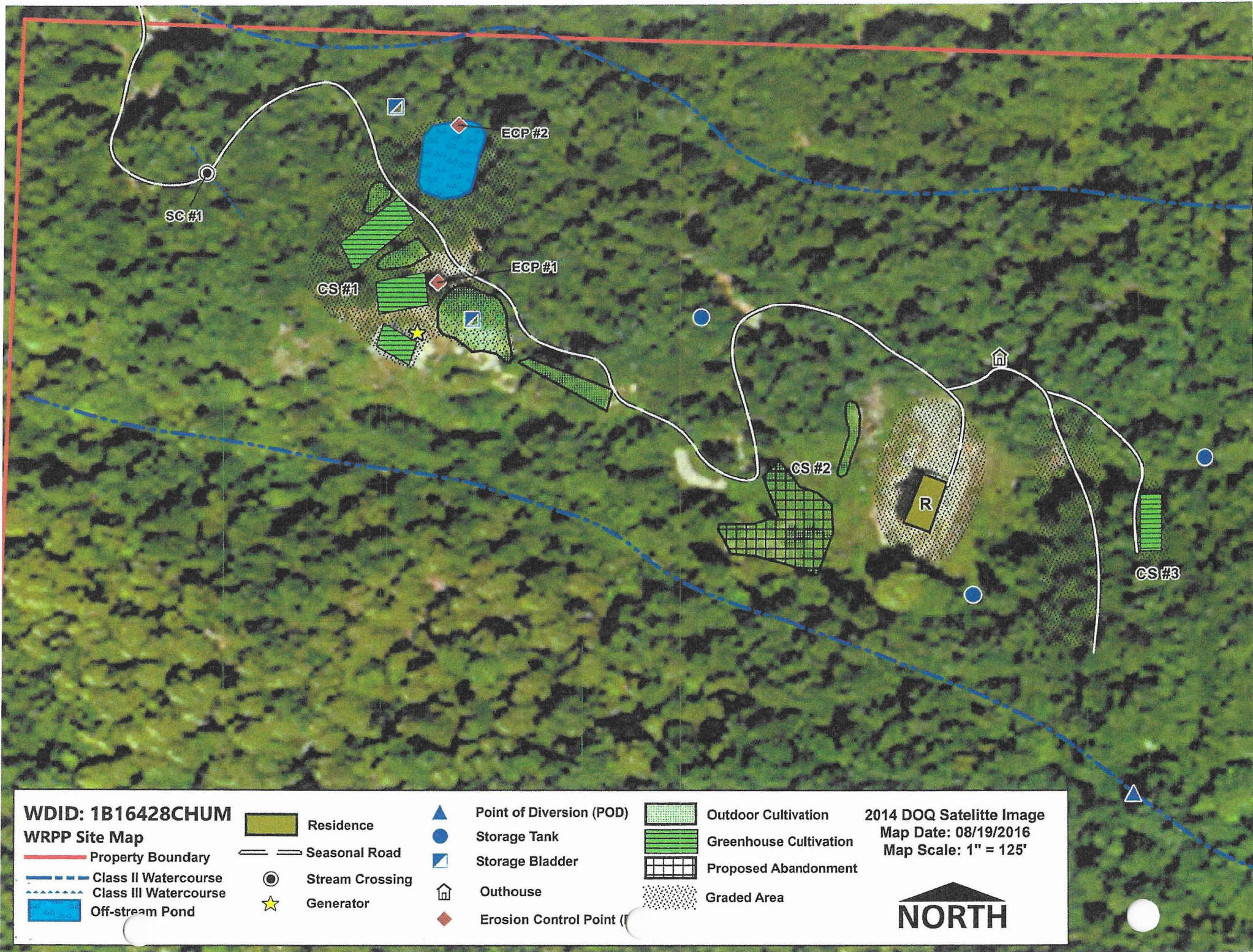
Map Scale 1" = 2,000'



**NORTH**

x1560





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**WRPP Site Map**

- Property Boundary
- Class II Watercourse
- Class III Watercourse
- Off-stream Pond
- Stream Crossing
- Seasonal Road
- Generator

- Residence
- Storage Tank
- Storage Bladder
- Outhouse
- Erosion Control Point (ECP)

- Point of Diversion (POD)
- Storage Tank
- Storage Bladder
- Outhouse
- Erosion Control Point (ECP)

- Outdoor Cultivation
- Greenhouse Cultivation
- Proposed Abandonment
- Graded Area

2014 DOQ Satellite Image

Map Date: 08/19/2016

Map Scale: 1" = 125'





**WDID: 1B16428CHUM**

**WRPP Site Map**

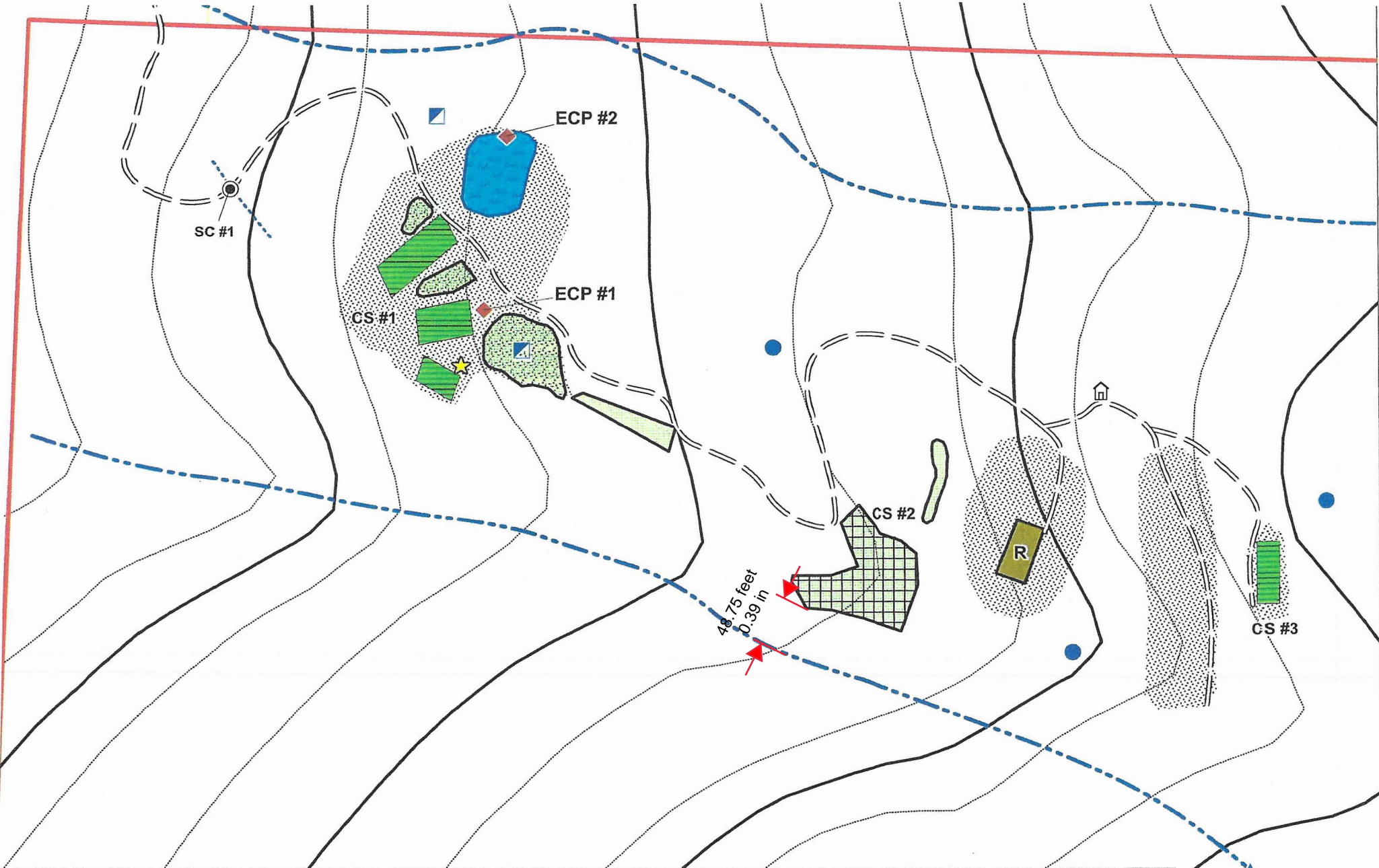
- Property Boundary
- Class II Watercourse
- Class III Watercourse
- Off-stream Pond

- Residence
- Seasonal Road
- Stream Crossing
- Generator

- Point of Diversion (POD)
- Storage Tank
- Storage Bladder
- Outhouse
- Erosion Control Point

- Outdoor Cultivation
- Greenhouse Cultivation
- Proposed Abandonment
- Graded Area

Lord Ellis Summit 7.5" Quad  
40' Contour Interval  
Map Date: 08/19/2016  
Map Scale: 1" = 125'

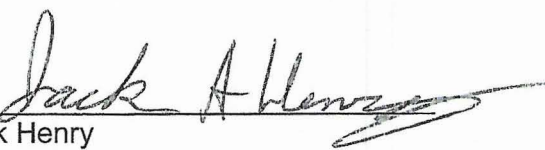




# STATEMENT OF CONTINGENT AND LIMITING CONDITIONS CONCERNING THE PREPARATION AND USE OF WATER RESOURCE PROTECTION PLAN

## Prepared by Timberland Resource Consultants

1. This Water Resource Protection Plan has been prepared for the property within APN 314-213-026 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. 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.

  
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Jack Henry  
Timberland Resource Consultants

### **BMP: Storage Bladders**

- Location for storage bladder must be sited and planned as to minimize the potential for impacts due to rolling and/or failure. Storage bladders should be stored on flat slopes where stability will not be affected.
- If bladders are stored on slopes the potential for rolling must be assessed and if necessary containment or anchors installed. Options to mitigate the potential for rolling may include a fence, dirt berm, or a tethered anchor.
- Secondary containment is recommended in the form of a dirt berm, containment pit or impermeable material with skeletal support. Dirt berms shall be sculpted to a maximum 1:2 slope ratio. The containment should be capable of holding the contents of the bladder. At the least, secondary containment should be designed to slow the initial force of a failure.
- Bladders should be monitored consistently throughout their use to prevent failure. Inspections for structural weaknesses and other risks that may cause failure should occur a minimum of once per month.



*This is an example of a containment pit which will assist in mitigating the impacts if this storage bladder failed.*



### **BMP: General BMPs**

- If operations require moving of equipment across a flowing stream, such operations shall be conducted without causing a prolonged visible increase in stream turbidity. For repeated crossings, the operator shall install a bridge, culvert, or rock-lined crossing.
- During construction in flowing water, which can transport sediment downstream, the flow shall be diverted around the work area by pipe, pumping, temporary diversion channel or other suitable means. When any dam or artificial obstruction is being constructed, maintained, or placed in operation, sufficient water shall at all times be allowed to pass downstream to maintain fish life below the dam. Equipment may be operated in the channel of flowing live streams only as necessary to construct the described construction.
- Disturbance or removal of vegetation shall not exceed the minimum necessary to complete operations. The disturbed portion of any stream channel shall be restored to as near their original condition as possible. Restoration shall include the mulching of stripped or exposed dirt areas at crossing sites prior to the end of the work period.
- Structures and associated materials not designed to withstand high seasonal flow shall be removed to areas above the high water mark before such flows occur.
- No debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete washing, oil or petroleum products, or other organic or earthen material from any logging, construction, or associated activity of whatever nature shall be allowed to enter into or be placed where it may be washed by rainfall or runoff into waters of the State. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any stream.

### **BMP: General Erosion Control**

- Timing for soil stabilization measures within the 100 feet of a watercourse or lake: For areas disturbed from May 1 through October 15, treatment shall be completed prior to the start of any rain that causes overland flow across or along the disturbed surface. For areas disturbed from October 16 through April 30, treatment shall be completed prior to any day for which a chance of rain of 30 percent or greater is forecast by the National Weather Service or within 10 days, whichever is earlier.
- Within 100 feet of a watercourse or lake, the traveled surface of logging roads shall be treated to prevent waterborne transport of sediment and concentration of runoff that results from operations. Treatment may consist of, but not limited to, rocking, outsloping, rolling dips, cross drains, waterbars, slope stabilization measures, or other practices appropriate to site-specific conditions.
- The treatment for other disturbed areas within 100 feet of a watercourse or lake, including: (A) areas exceeding 100 contiguous square feet where operations have exposed bare soil, (B) approaches to road watercourse crossings out to 100 feet or the nearest drainage facility, whichever is farthest, (C) road cut banks and fills, and (D) any other area of disturbed soil that threatens to discharge sediment into waters in amounts deleterious to the quality and beneficial uses of water, shall be grass seeded and mulched with straw or fine slash. Grass seed shall be applied at a rate exceeding 100 pounds per acre. Straw mulch shall be applied in amounts sufficient to provide at least 2- 4-inch depth of straw with minimum 90% coverage. Slash may be substituted for straw mulch provided the depth, texture, and ground contact are equivalent to at least 2 – 4 inches of

straw mulch. Any treated area that has been subject to reuse or has less than 90% surface cover shall be treated again prior to the end of operations.

- Within 100 feet of a watercourse or lake, where the undisturbed natural ground cover cannot effectively protect beneficial uses of water from operations, the ground shall be treated with slope stabilization measures described in #3 above per timing described in #1 above.
- Sidecast or fill material extending more than 20 feet in slope distance from the outside edge of a landing which has access to a watercourse or lake shall be treated with slope stabilization measures described in #3 above. Timing shall occur per #1 above unless outside 100 feet of a watercourse or lake, in which completion date is October 15.

All roads shall have drainage and/or drainage collection and storage facilities installed as soon as practical following operations and prior to either (1) the start of any rain which causes overland flow across or along the disturbed surface within 100 feet of a watercourse or lake protection, or (2) any day with a National Weather Service forecast of a chance of rain of 30 percent or more, a flash flood warning, or a flash flood watch.

### **BMP: Crossing Abandonment**

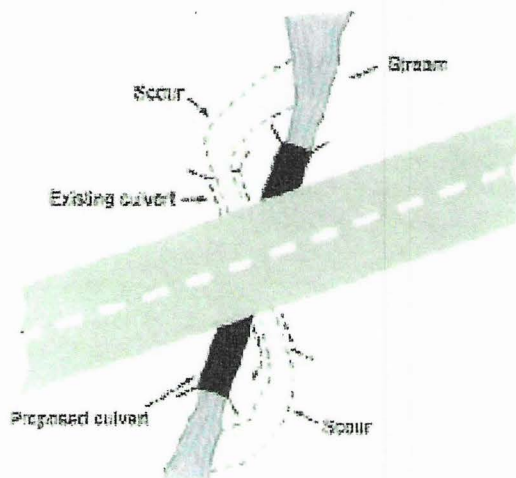
- When fills are removed they shall be excavated to form a channel that is as close as feasible to natural watercourse grade and orientation, and that is wider than the natural channel.
- Excavated banks shall be laid back to a 2:1 (50%) or natural slope.
- Temporary crossings shall be removed by November 15.
  - Any temporary culvert crossing left in after October 15 or installed between October 15 and May 1, shall be sized to accommodate the estimated 100-year flow.
- Bank and channel armoring may occur when appropriate to provide channel and bank stabilization.

### **BMP: Permanent Culvert Crossing**

- New culvert installations shall be sized to accommodate a 100-year storm.
- 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.

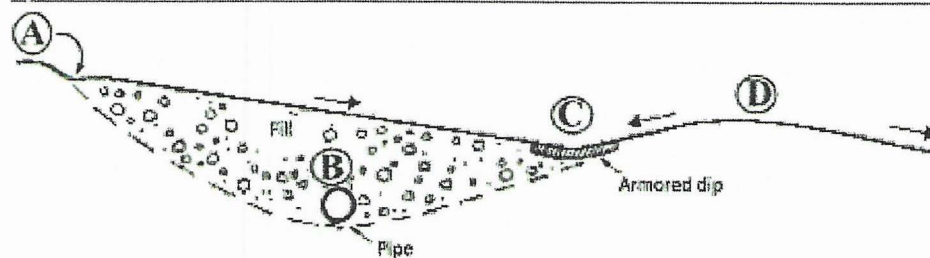
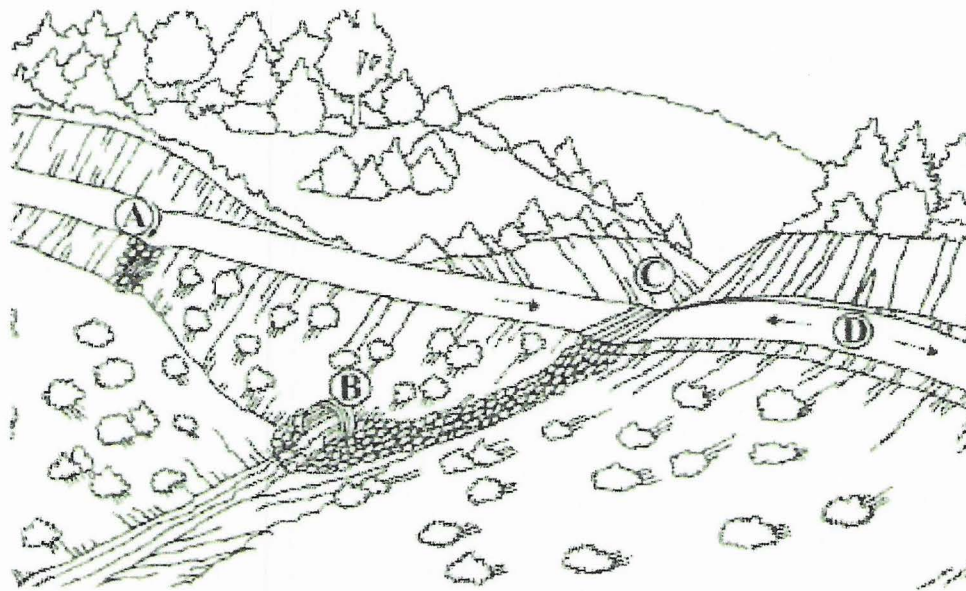


- Backfill compacting will be done in 0.5 – 1.0 foot lifts until 1/3 of the diameter of the culvert has been covered.
- Push layers of fill over the crossing to achieve the final design road grade, at a minimum of one-third to one-half the culvert diameter.
- Critical dips shall be installed on culvert crossings to eliminate diversion potential. Refer to Figure 86 below.
- Road approaches to crossings shall be treated out to the first drainage structure (i.e. waterbar) 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 can not 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 87.** 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 inlet and outlet are often accompanied by scour against the channel banks (Wisconsin Transportation Information Center, 2004).

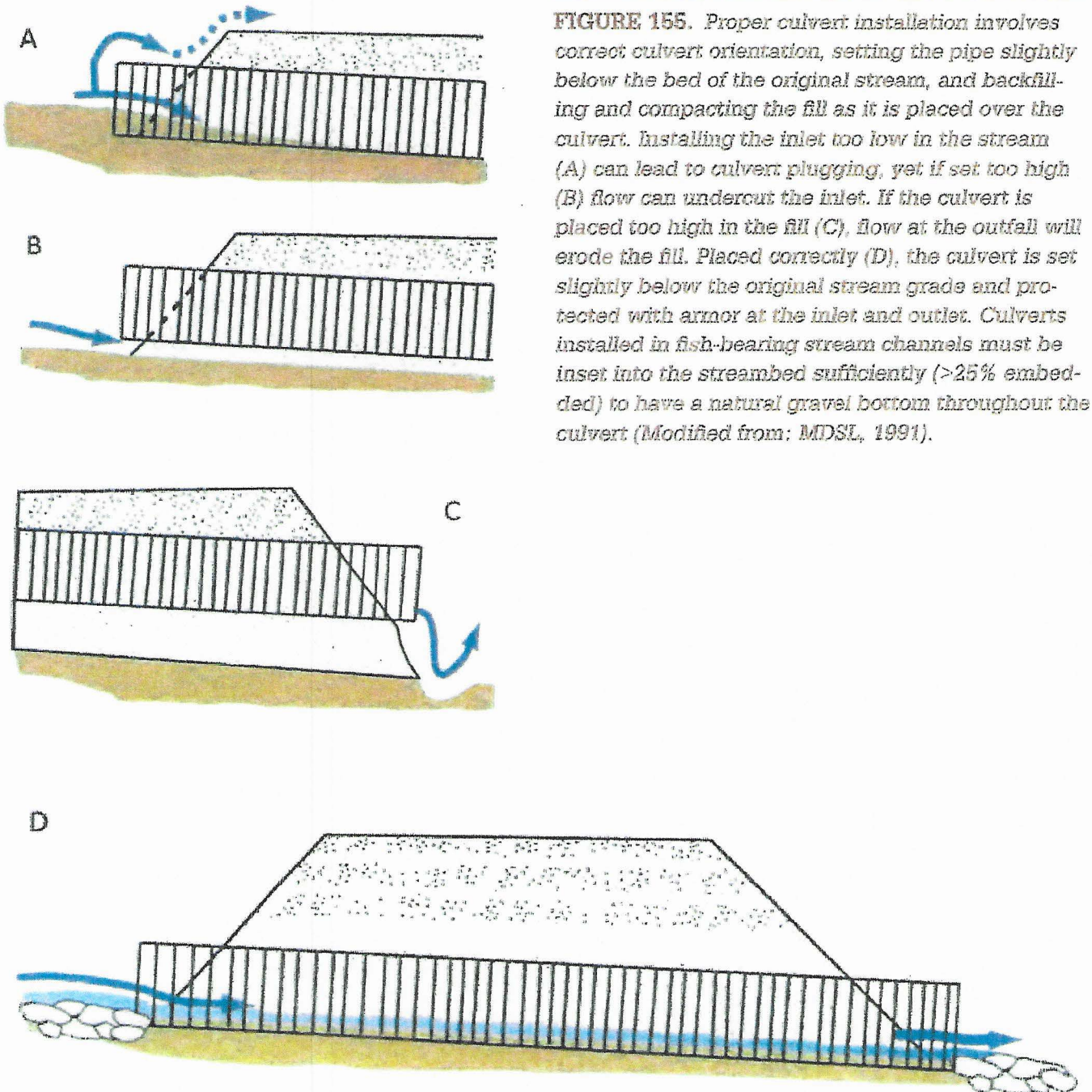
## BMP: Permanent Culvert Crossing (Cont.)



**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, ziprap 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 erosional 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).



## BMP: Permanent Culvert Crossing (Cont.)





### BMP: Inlet and Outlet Armoring

- Inlets of culverts and associate fills shall be protected with rock armoring that extends at least as high as the top of the culvert.
- Outlets of culverts shall be provided a rock energy dissipater at the outfall of the culvert.
- Outlets of culverts and associate fills shall be protected with rock armoring that extends at least as high as the top of the culvert if road fill sloughing into channel can occur.
- Prior to inlet and outlet rocking, the inlet and outlets shall be prepared. Preparation will include removal of vegetation and stored materials from the inlet and outlet.
- Inlets may require construction of an inlet basin.
- Slopes at the outlet should be shaped to a 2:1 or natural slope prior to placing rock armor.
- Rock used at culvert inlets and outlets should be a matrix of various sized rocks and rip-rap that range from a 3" dia. to a 2' dia.
- The largest rocks should be places at the base of the culvert or fill. Incrementally smaller rocks shall be placed over the larger rocks at the armoring extend up the slope. Voids and spaces shall be back filled with smaller gravels and rocks.

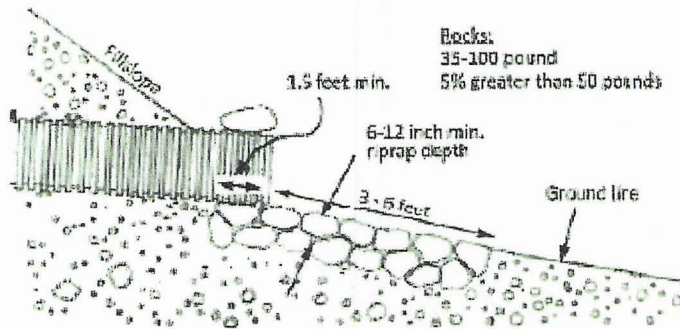


FIGURE 107A. Riprap armor at culvert outlet (Modified from: Keller et al., 2011).

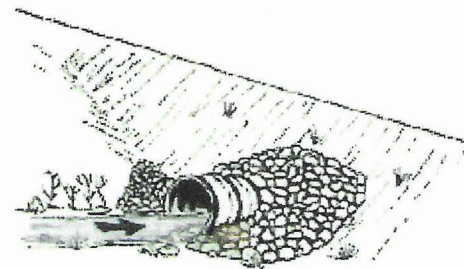


FIGURE 107B. Riprap armor at culvert inlet (Keller and Sherar, 2003).



### **BMP: Storage Bladders**

- Location for storage bladder must be sited and planned as to minimize the potential for impacts due to rolling and/or failure. Storage bladders should be stored on flat slopes where stability will not be affected.
- If bladders are stored on slopes the potential for rolling must be assessed and if necessary containment or anchors installed. Options to mitigate the potential for rolling may include a fence, dirt berm, or a tethered anchor.
- Secondary containment is recommended in the form of a dirt berm, containment pit or impermeable material with skeletal support. Dirt berms shall be sculpted to a maximum 1:2 slope ratio. The containment should be capable of holding the contents of the bladder. At the least, secondary containment should be designed to slow the initial force of a failure.
- Bladders should be monitored consistently throughout their use to prevent failure. Inspections for structural weaknesses and other risks that may cause failure should occur a minimum of once per month.



*This is an example of a containment pit which will assist in mitigating the impacts if this storage bladder failed.*



### BMP: Armored Ford [Fill]

- Armored fords are watercourse crossing fills comprised primarily of rock and designed to carry watercourses across roads without erosion or displacement of installed fill material.
- Armored fords shall have a U-shaped channel to create a drivable crossing.
  - The road shall dip into and out of the armored ford to minimize diversion potential. Construct a broad rolling dip across the roadbed, centered at the crossing, which is large enough to contain the expected 100-yr flood discharge while preventing flood flow from diverting down the road or around the rock armor.
- The road surface at the armored ford shall consist of rock small enough to be easily passable by vehicle, but large enough to not be transported during high flow storm events.
- The ford's inlet shall be rock armored to resist head cutting exists.
  - *Excavate the keyway* - Excavate a one to three foot deep "bed" into the inboard edge of the road
  - *Armor the basal keyway* - place various sized rock in the constructed keyway to prevent head cutting. Use the largest rock armor to fill the keyway trench and create a buttress along the inboard edge of the road. This should have a "U" shape to it and it will define the inlet where flow leaves the natural channel and enters the road.
- The ford's outlet shall be rock armored to resist downcutting and erosion.
  - *Excavate the keyway and armored area* - Excavate a two to three foot deep "bed" into the dipped road surface and adjacent fillslope (to place the rock in) that extends from approximately the middle of the road, across the outer half of the road, and down the outboard road fill to where the base of the fill meets the natural channel. At the base of the fill, excavate a keyway trench extending across the channel bed.
  - *Armor the basal keyway* - Put aside the largest rock armoring to create the buttresses. Use the largest rock armor to fill the basal trench and create a buttress at the base of the fill. This should have a "U" shape to it and it will define the outlet where flow leaves the armored fill and enters the natural channel.
  - *Armor the fill* - Backfill the fill face with the remaining rock armor making sure the final armor is unsorted and well placed, the armor is two coarse-rock layers in thickness, and the armored area on the fill face also has a "U" shape that will accommodate the largest expected flow.
  - *Armor the top of the fill* - Install a second trenched buttress for large rock at the break-in-slope between the outboard road edge and the top of the fill face.
- Road approaches to armored fords shall surface rocked out to the first drainage structure (i.e. waterbar, rolling dip, or hydrologic divide) to prevent transport of sediment using rock.
- Bank and channel armoring may occur when appropriate to provide channel and bank stabilization.
- Armored ford armoring shall be reapplied following use as needed to maintain a permanent crossing

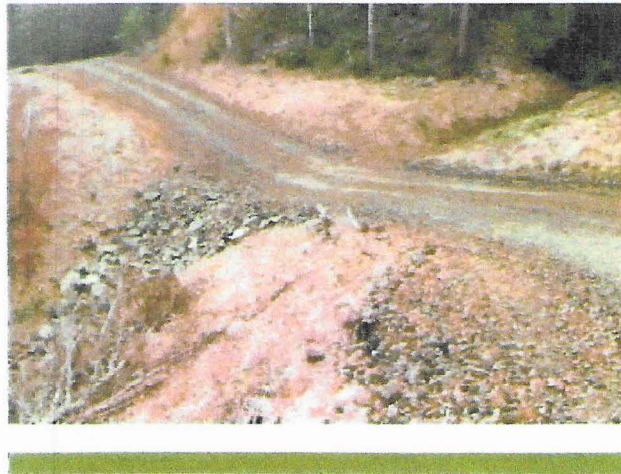


FIGURE 120. This armored fill crossing of a steep, ephemeral stream was constructed to provide a low maintenance crossing. The crossing has been deeply dipped to reduce the volume of road fill and to eliminate the potential for stream diversion. The fill slope has been heavily armored through the acts of the crossing to contain flood flows and prevent downcutting. Armored fills cannot be used on fish bearing streams.