

Response to Comment S6-95

As noted above, the Services' role is to evaluate consistency of an HCP as a whole with the ESA Section 10 Permit approval criteria. Issuance criteria are discussed in EIS Section 1.3, AHCP/CCAA Section 1.4.1 and Master Response 8. The Services believe that Green Diamond's Operating Conservation Program (AHCP/CCAA Section 6.2), including the proposed measures contained in AHCP/CCAA Section 6.2.3.6.1, meets these criteria.

2. **When road construction or access to construction sites results in soil displacement in amounts sufficient to cause a visible increase in turbidity in any ditch or road surface that drains into a Class I, II, III or IV watercourse; except that construction may occur on and access can proceed over hydrologically disconnected, isolated wet spots in the road prism arising from localized groundwater. Natural seeps or springs will be avoided to the maximum extent practicable in the construction of new roads. Any seep and spring areas encountered in the path of the proposed road will be evaluated by an aquatic biologist to determine whether the loss of habitat could cumulatively impact covered amphibian sub-populations.**

~~when soil moisture conditions would result in:~~

- ~~1. Reduced traction by equipment as indicated by spinning or churning of wheels or tracks in excess of normal performances;~~
- ~~2. Inadequate traction without blading wet soil; or~~
- ~~3. Soil displacement in amounts that cause a visible increase in turbidity in any ditch or road surface that drains into a Class I, II, III or IV watercourse; except that construction may occur on isolated wet spots arising from localized groundwater such as seeps or springs.~~

6.2.3.6 Drainage Structures for New Road Construction and Road Reconstruction

6.2.3.6.1 Fill Minimization

Simpson will construct all new watercourse crossings to minimize fill over the culvert. Fill depth over culvert specifications may be found on page 103 in Weaver and Hagans, and should be included here.

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6.2.3.6.2 Design Flow

1. All new **and reconstructed** watercourse crossings **and ditch relief culverts** culverts will be designed to **accommodate** handle ~~a~~ **the** 100-year return interval **flood flow flow-event including debris and sediment loads without overtopping or diverting down the road or ditch.**
2. The design flow will be calculated using the Waananen and Crippen method (1977) for areas greater than or equal to 80 acres. The Rational Method (Chow 1964) will be used when the drainage area for a crossing is less than 80 acres.
3. Culverts will be sized to pass the 100-year **return interval flood flow event** without overtopping **the culvert** (headwater depth to culvert diameter ratio =1.0).
4. Other flow design estimation methods developed in the future for the North Coast Region may be substituted if comparable, **as long as they result in all new and reconstructed watercourse crossings and ditch relief culverts being designed to accommodate the 100-year return interval flood flow including**

debris and sediment loads without overtopping or diverting down the road or ditch.

6.2.3.6.3 Temporary Road Watercourse Crossings Design

1. Watercourse crossings on temporary roads designed for one time summer season use will be designed to **minimize the amount of soil disturbance and fill, carry the flow throughout the period of use including time of construction, at the time of construction** and will be removed prior to October 15th in the year it was installed.
2. A minimum six-inch pipe size will be used on small seeps and springs.
3. **A SAA notification will be submitted to DFG for temporary watercourse crossings.**

6.2.3.6.4 Fish-bearing Watercourses

1. Simpson will install bridges on fish-bearing watercourses where feasible. A timeframe by which all fish-bearing watercourse crossings would be bridged is needed here.
2. When a bridge installation is not feasible, a countersunk or bottomless culvert (or other fish-friendly structure) will be installed **at a grade on-grade** that will provide **unrestricted** upstream and downstream fish passage **at all life history stages throughout the year**. Installed culverts will not restrict or reduce the active channel flow.

6.2.3.6.5 Diversion Prevention

Simpson will construct **and reconstruct** permanent watercourse crossings, **ditch relief culverts**, road approaches to crossings, and associated fills to prevent the potential diversion of stream overflows down the road **or ditch** and to minimize fill erosion should the drainage structure become obstructed.

6.2.3.6.6 Erosion Protection Measures

1. Simpson will install erosion protection **materials measures** such as **inlet and outlet armoring of culvert inlets and outlets, installation of pipes and energy dissipaters, rock armoring flow paths across fill prisms, and rock armoring ditch approaches to watercourses concurrently with fill construction as necessary** to effectively prevent erosion of **concurrently with** the fill at all culverted watercourse crossings.
2. Armoring will extend at least one foot above the **expected** head and tail water elevations **at expected at the culvert during a 100 year return interval storm, the culvert**.
3. All bare soil on **cut and fill slopes** at the culvert crossing will be seeded and/or mulched. **At sites where seed and mulch alone may be ineffective at**

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The Services understand the commenter's concern. However, the Services believe that Green Diamond's proposed culvert replacement methods and materials are adequate to meet the Plan's goals and objectives. Green Diamond is not restricted from using plastic culverts, and as technology improves, has agreed to consider using plastic culverts.

reducing erosion to the maximum extent practicable, **additional erosion control materials will be applied** prior to the first winter period following installation.

6.2.3.6.7 Alignment

Simpson will align all watercourse crossings with the natural grade, **bed elevation** and course of the stream to the fullest extent possible. **Where not possible, Simpson will effectively minimize the potential for channel downcutting or bank erosion by rock armoring erosion prone slopes, banks, and channels influenced by the crossing.**

6.2.3.6.8 Compaction

Simpson will compact fill material for at least the first two feet around all ~~over~~ culvert installations to achieve at least 95% relative compaction. For culverts with less than two feet of depth below the road surface, compaction will be at least 95% for the entire depth. Compacted fill around culverts will consist of 3/4" minus graded rock. The remainder of the fill will be compacted in one-foot lifts to achieve at least 90% relative compaction throughout the fill including fill faces. Equipment designed specifically for backfill compaction will be used at all installations.

6.2.3.6.9 Minimum Culvert Sizes and Specifications

Simpson will install a minimum culvert size of 24 inches in Class II watercourse crossings on management roads, except for springs and seeps where such size would be unnecessary or impractical. **Where metal pipes are used in permanent crossings, they will be galvanized and no thinner than 14 gauge (2.010 millimeter, 0.079"). Plastic will not be used for permanent watercourse crossings requiring larger than a 24" diameter culvert.** A minimum thickness standard should apply to all permanent metal pipe drainage structures to minimize crossing disturbance due to replacement, repair, or product failures, and maximize the useful life of the culvert. DFG is informed through discussions with professional hydraulics engineers to achieve approximately fifty year service life in the high acid forest environment of Simpson lands in the plan area, metal culverts should be galvanized and be no thinner than 14 gauge (2.010 mm, 0.079"), and preferably 12 gauge (2.77mm, 0.11") or thicker. DFG is also informed through conversations with professional hydraulics engineers and foresters there are significant problems associated with plastic pipe related to couplers, particularly in the larger diameters. Permanent installations of larger diameter plastic pipe requiring couplers in steep, often unstable forest terrains should be deferred until the technology improves.

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6.2.3.6.10 Discharge

1. No culvert will be discharged onto erodible material or unstable slopes. **Half rounds will be avoided to the maximum extent feasible. Full round downspouts (also known as downdrains and overside drains) will be used only when it is not feasible to install the culvert at grade or to discharge it at the toe of the fill, or not feasible to extend the culvert outlet to beyond the toe of the fill.**

2. When downspouts or **half rounds** are used, they will be **at least one standard diameter larger than the culvert, securely anchored** ~~adequately secured to the culvert, and securely anchored for their entire length with an anchor assembly consisting of pipe stakes and coupling bands. and they will be supported at intervals along their entire length.~~

6.2.3.6.11 Ditches

1. Ditches will be V-shaped and will be approximately one-foot deep relative to the road subgrade.
2. Simpson will excavate ditches into the road subgrade and will not undercut the road cut slope.
3. Where conditions warrant it, ditch alignment will be pulled away from the cut slope to provide storage room for hillslope ravel, and slumps, and to provide protection of ditch conveyance capability.

6.2.3.6.12 Maximum Spacing of Ditch Relief Culverts and/or Rolling Dips

Simpson will install ditch relief culverts and/or rolling dips at intervals based on the following maximum spacing:

Maximum Spacing (feet) by Surface Erosion Hazard Rating*(note asterisk)

<u>Road Grade</u>	<u>Extreme</u>	<u>High</u>	<u>Moderate/Low</u>
2%	600	---	---
4%	530	600	---
6%	355	585	600
8%	265	425	525
10%	210	340	420
12%	180	285	350
14%	155	245	300
16%	135	215	270
18%	115	190	240

***Note: Closer spacing may be necessary to prevent diversion of streamflow down the road or ditch and reduce hillslope erosion. The appropriate spacing will be based on a combination of the surface erosion hazard rating (which may need to be determined separately from harvest units and may differ with changes in soils,**

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See response to Comment R1-108.

aspect, and geology), road gradient, road surface condition, receiving watercourse proximity, amount of disturbed ground hydrologically connected to the road segment drained by the ditch relief culvert or rolling dip, expected rainfall intensity, and maintenance frequency.

6.2.3.6.13 Additional Culverts and Rolling Dips

Simpson will install additional ditch relief culverts and rolling dips **wherever necessary to effectively** ~~where appropriate to adequately disconnect the roads from the~~ watercourses and to minimize ditch **downcutting and** water accumulation on slide prone landforms such as inner gorges. **At a minimum, additional ditch relief culverts will be installed where ditch downcutting may occur, where additional ditch relief runoff is being received at road junctions, and where existing ditch relief culverts show evidence of past diversion or excessive outlet erosion.**

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6.2.3.6.14 Ditch Relief Culverts Drains The terms "ditch drain" and "ditch relief culvert" appear to be used interchangeably in the document. DFG suggests using only "ditch relief culvert" throughout the document.

Ditch relief culverts will consist of culverts with a minimum size of 18 inches. ~~except where circumstance warrant otherwise.~~

6.2.3.6.15 Ditch Relief Culvert Drain Discharge

1. Ditch ~~drains~~ relief culverts will be discharged at frequent intervals to minimize disruption of hillslope hydrology and the amount of runoff concentrated at each outlet. The last ditch relief culverts prior to watercourse crossings will be discharged to stable, non-erodible hydrologically disconnected sites no closer than 50 to 100 feet before water enters a Class I or II or III watercourse.
2. Ditch relief culverts ~~drains~~ will discharge onto stable landforms with adequate energy dissipation and sediment filtering capacity. **Where adequate sediment filtration capacity does not exist (e.g. due to ditches along road approaches to tight radius curves paralleling watercourses), to the maximum extent practicable, ditch relief frequency will be increased or the road outsloped to disperse runoff and effectively minimize sediment delivery to the ditch relief culvert nearest the watercourse crossing.**
3. Outlets discharging onto fills, areas prone to gullyng, slumping or land sliding will be avoided to the maximum extent feasible. **Where not feasible, erosion protection measures at outlets will be over-designed to minimize surface erosion and outlet failure potential.** ~~or provided with erosion protection measures:~~

6.2.3.6.16 Ditch Relief Culvert Drain-Grades

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See Master Response 14 regarding Plan enforceability and the response to Comment S6-81, among many others, regarding the respective roles of Green Diamond and the Services in Operating Conservation Program development and Permit issuance.

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See the response to Comment S6-73 regarding the respective roles of the Permit applicant and the Services in the development of an HCP. The Services believe that the Plan, which includes AHCP/CCAA Section 6.23.7.2, meets the ESA Section 10 Permit approval criteria (see Master Response 8).

Response to Comment S6-100

New landing construction will not occur during the winter period (October 16 through May 14). See AHCP/CCAA Section 6.2.3.7.2 (*Limitation on New Landing Construction*).

Ditch relief culverts ~~drains~~ will have a grade that is at least 2% greater than a contributing ditch and will be installed at a lateral angle to the ditch of approximately 30%.

6.2.3.7 New Landing Construction and Reconstruction

6.2.3.7.1 Landings in RMZ s or EEZs

Simpson will not construct or reconstruct new landings in an RMZ, or EEZ, or ELZ with the following exception: Landing reconstruction in an RMZ, EEZ, or ELZ may occur only where reconstruction will result in less potential for impacting aquatic resources than landing construction outside the RMZ, EEZ, or ELZ , as determined by a qualified fisheries biologist and agreed to by the Services.

6.2.3.7.2 Limitation on New Landing Construction and Reconstruction

1. Simpson will ~~make every reasonable effort to~~ limit new landing construction and reconstruction and associated excavation by landing logs on existing roadways to the maximum extent practicable. "Every reasonable effort" is not enforceable.
2. When it is necessary to construct or reconstruct landings, landings will be located on topographic flats and divergent slopes where possible. **Where not possible, Simpson will not construct or reconstruct landings within 200 feet of a Class I or II watercourse, or 100 feet of a Class III watercourse.** Additional, specific, enforceable mitigation measures need to be included by Simpson where landing construction or reconstruction is proposed in convergent slope settings.
3. New landing construction will not occur during the winter period (October 16 through ~~June 1 May 14~~), during periods of precipitation, or when there is a 30% or greater chance of measurable rain in the next 48 hours DFG believes road and landing construction should not occur in the latter part of May because the probability of saturated soil conditions and appreciable precipitation is still high.

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6.2.3.7.3 Soil Moisture Conditions

Simpson will not carry out landing construction when any of the following conditions exist: ~~soil moisture conditions would result in~~ (1) runoff from and/or rutting of hydrologically connected road surfaces used to access a landing occurs; reduced traction by equipment as indicated by spinning or churning of wheels or tracks in excess of normal performance; (2) runoff from and/or rutting of landing surfaces or landing sites occurs; (3) inadequate traction without blading wet soil on road surfaces used to access a landing, or on landing surfaces occurs; or (3) soil displacement occurs in amounts sufficient to ~~that~~ cause a visible increase in turbidity in any ditch, appurtenant road segment, or landing surface that drains into a Class I, II, III or IV watercourse. Simpson should construct all landings in the dry season, particularly since Simpson states every reasonable effort will be made to land logs on existing roadways.

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Response to Comment S6-101

LWD in waste organic material could be used for placement into watercourses. However, such placement should be carefully planned, and would be evaluated on a case-by-case basis.

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When landing construction cannot be avoided outside the dry season, the above measures should further reduce sediment discharge potential associated with this activity.

6.2.3.7.4 Steep Slopes

For new landing construction, Simpson will not place fill or sidecast and will minimize sidecast, on slopes greater than 65%.

6.2.3.7.5 Risk Assessment and Pull Back

1. Simpson will assess all landings used as part of the current operations after completion of operations to determine whether or not any overhanging or perched fill or organic material in such landings poses a risk of failure and/or sediment delivery to a watercourse **any area hydrologically connected to a watercourse.**
2. If a risk of failure and sediment delivery to a watercourse exists, fill material will be pulled back to a stable condition and excavated material will be deposited in a stable location. The pull back will be accomplished **as soon as feasible following completion of landing use, and** prior to October 15th following the completion of operations. Waste material will be seeded and mulched prior to October 15th in the year it is produced.

6.2.3.7.6 Sidecast Treatment

1. On side slopes less than 50%, Simpson will seed, plant, mulch, remove or treat sidecast or fill material extending more than 20 feet in slope distance from the outside edge of the landing and within 200 feet of a watercourse or lake to minimize soil erosion.
2. Excess material will be deposited in a stable location where downstream beneficial uses of water will not be adversely affected **and sediment will not reach a watercourse or hydrologically connected facility.**

6.2.3.7.7 Waste Organic Materials

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1. Simpson will not bury waste organic material such as uprooted stumps, cull logs, accumulations of limbs and branches, or unmerchantable trees in landing fills. **The presence of cull logs and unmerchantable conifers greater than 18 inches in diameter and 30 feet long and large stumps to remain at landings will be reported to Simpson biologists for assessment as candidates for instream LWD projects.** There may frequently be a significant amount of sizeable non-merchantable LWD available for placement into watercourses over the life of the AHCP. The presence of such material should be made known to Simpson biologists as soon as possible.
2. Slash and other organic debris may be placed and stabilized at the toe of landing fills to restrain fill soil from moving downslope.

Response to Comment S6-102

See response to Comment S6-91.

Response to Comment S6-103

The road surfacing described in AHCP/CCAA Section 6.2.3.8.1 refers primarily to surfacing with rock. However, in areas with extremely erosive soils, Green Diamond applies straw mulch to unsurfaced roads prior to the first winter season following construction. Green Diamond considers road treatments such as lignin (that the commenter refers to) as a form of dust abatement.

6.2.3.7.8 Drainage of Landings

1. Upon completion of timber operations, Simpson will drain landings to prevent water from accumulating.
2. Concentrated flows will not be channeled over fills and will only be discharged onto stable areas; **with filter strip properties adequate to prohibit sediment discharges to watercourses or hydrologically connected drainage facilities.**
3. Discharge points will be located on stable landforms and where stable discharge points are absent **effective adequate** erosion protection and energy dissipation will be **installed employed to the extent required to prohibit sediment discharges to watercourses or hydrologically connected drainage facilities.**

6.2.3.7.9 Surfacing for Landings

Landings that will be used during the winter period will have surfacing specifications of minimum compacted depth of 12 inches of rock. Only rock that is **durable** and does not **readily** break down with vehicle or heavy equipment use will be applied to landing surfaces. DFG believes Simpson should only use rock that meets an enforceable standard for durability. Such standards are available from DFG (See DFG comments to 6.2.3.5.10 regarding rocking).

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6.2.3.8 Erosion Control Measures for New Road and Landing Construction

6.2.3.8.1 Erosion Control during Construction

Simpson will use **effective appropriate** erosion control measures to minimize erosion and prevent sediment from entering watercourses during **and immediately upon completion of** all road and landing construction activities. Such measures will include but are not limited to:

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1. Road surfacing What kind of surfacing is proposed other than road rocking? Is treatment with lignin based products or asphalt emulsions considered road surfacing? (See DFG comments to 6.2.3.5.10 regarding rocking).
2. Dispersing runoff into stable vegetated filter areas **located away from watercourses or hydrologically connected drainage facilities.**
3. Armoring with rock rip-rap
4. End hauling waste material to stable locations
5. Construction of rolling dips, critical dips, and waterbars
6. Mulching
7. Revegetating disturbed surfaces as soon as **feasible practical**

6.2.3.8.2 Construction in Close Proximity to Watercourses

Response to Comment S6-104

There are several methods by which this information will likely be distributed. See Master Response 14 regarding Plan enforceability.

Where construction activities are conducted in close proximity to watercourses, Simpson will use additional erosion control protection measures to trap sediment and minimize its entry into the watercourse. Slash filter windrows, silt fences, mulching, and/or straw bale check dams will be used to control runoff over fill slopes and along concentrated runoff flow paths, on an as-needed basis.

6.2.3.8.3 Construction of Features

1. All watercourse crossings and cross drains will be installed and functional prior to October 15th.
2. All waterbars and rolling dips will be constructed, and projects associated with straw mulching and grass seeding will be completed, by October 15th.

6.2.3.8.4 Seeding and Mulching

Prior to **October 15** ~~the beginning of the first winter period following construction~~, Simpson will seed all new cut and fill slopes on roads constructed within an RMZ or EEZ of a Class I, II, or III watercourse at a rate of at least 30 pounds per acre and mulched to a depth of at least two inches (before settling) with 90% surface coverage.

6.2.3.8.5 Temporary Crossings

1. At temporary crossings, Simpson will **remove culverts and all fill material to original stream grade**, pull back the fill slope to the natural side slopes and deposit the material in a stable location where sediment will not deliver to any watercourses. **Fill removal will include the use of hand tools where necessary to feasibly remove loose fill missed by or inaccessible to heavy equipment.**
2. All exposed areas associated with the crossing will be seeded at a rate of at least thirty pounds per acre and mulched to a depth of at least two inches (before settling) with 90% surface coverage.

6.2.3.9 Routine Road Maintenance and Inspection Plan

6.2.3.9.1 Distribution of Information

Simpson will distribute information about proper road use and reporting of maintenance problems to all of its woods personnel and woods contractors and to members of the public who have road access to the Plan Area **prior to commencement of operations under the plan or public use of the plan area**. DFG recommends there be a set time by which this information is distributed after approval of the AHCP. It otherwise appears unenforceable.

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6.2.3.9.2 Time of Year Restrictions

1. Simpson may carry out **the following activities year-round, including during the winter period, only where complete and effective hydrologic disconnection of the road segment exists at the location of proposed**

Response to Comment S6-105

See Master Response 14 regarding Plan enforceability.

Response to Comment S6-106

“Mainline roads” are defined in AHCP/CCAA Section 6.3.3.2.1. This definition has been added to the glossary (AHCP/CCAA Section 10.2). See also AHCP/CCAA Figures 6-7 (A-C).

Response to Comment S6-107

Based on AHCP/CCAA Section 6.2.3.9 and 6.3.3.8, the Services believe that the meaning of “needed maintenance” is clear, and that no change is required.

activities, and where access to such segments will not result in rutting, pumping of fines, or otherwise predispose any road surface used to access the work site to sediment runoff from subsequent precipitation: patch (spot) rocking, brushing, cleaning inlets and outlets of ditch relief culverts, cleaning ditches where poor drainage is occurring, repairing or maintaining existing waterbars, replacement of a failed or imminently failing culvert along a needed access road, and site specific road surface grading for maintaining the integrity of the road surface year round, including during the winter period. Replacement of a failed or imminently failing culvert along a needed access road may occur only when and where the risk to aquatic resources is greater if repair work is deferred until after June 1 and prior to October 15. Risk to aquatic resources will be determined by the Services and/or the DFG under a SAA notification. Repairs conducted under a declared emergency are exempt.

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- 1. A definition and enforceable specification for patch (spot) rocking is needed.
- 2. Grading will not be used to blade off or reincorporate into the road surface wet soil or a matrix of wet soil and rock to provide conditions for extended periods of operation on a deteriorated road surface.
- 3. The installation of waterbars, rolling dips and critical dips, general project grading for shaping the road surface, road outsloping, road rocking, resurface rocking, cleaning ditch lines, and general culvert replacements may occur only during the period when road upgrading may occur (see 6.2.3.4.1, 6.2.3.4.2, and 6.2.3.4.3).

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6.2.3.9.3 Road Maintenance Schedules for Mainline and Appurtenant Roads "Mainline" should be defined here and added to the glossary. A listing of all mainline roads with their mileage, numbering system, and watersheds should be provided to the Services immediately upon AHCP approval.

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- 1. Prior to September 15th of each year, Simpson will inspect all mainline roads for needed maintenance. DFG recommends "needed maintenance" be clearly defined. Some maintenance needs apply more to the serviceability of the road for timber operations than the potential for sediment delivery to aquatic resources. DFG has, over at least the last five years, participated in numerous pre-harvest inspections and monitoring inspections involving several hundred road inspection points. Through these efforts, we have determined many road segments have been maintained to allow for timber operations but not maintained to reduce risks to aquatic resources as required by the FPRs, specifically 14 CCR 923.4. Simpson timber harvesting plans submitted concluding the appurtenant road systems to be "in good shape" have, in fact, been found by DFG to require significant if not comprehensive drainage and grading work to be in conformance with the FPRs.
- 2. Other roads that are appurtenant to THPs will be inspected at least through the prescribed maintenance period for erosion controls specified in the THP.
- 3. The inspections of mainline and other roads will assess the effectiveness and condition of all erosion control and drainage structures.

Response to Comment S6-108

“Secondary roads” are defined in AHCP/CCAA Section 6.3.3.2.1. This definition has been added to the glossary (AHCP/CCAA Section 10.2).

Response to Comment S6-109

The Plan requires inspection of all mainline roads every year (AHCP/CCAA Section 6.2.3.9.3). All other management roads or roads yet to be decommissioned that are accessible to maintenance crews will be maintained (AHCP/CCAA Section 6.2.3.9.4). Because of the number of roads currently on the landscape, the Plan establishes a rotating schedule under which maintenance will occur. Based on this schedule and the number of mainline roads, the Plan contains an estimate that approximately 45 percent of Green Diamond’s roads will be maintained annually at the beginning of the Plan. As the Plan is implemented over time, the number of roads that will require maintenance would decrease but the actual percentage of maintained roads would increase because there will be fewer roads due to the road decommissioning that will occur under the Plan.

S6-108 [6.2.3.9.4 Road Maintenance Schedules for All Secondary Management Roads or Roads Not Yet Decommissioned The word “Secondary” should be defined here and added to the glossary.

1. Simpson will maintain all secondary management roads or roads yet to be decommissioned that are accessible to maintenance crews in trucks or ATVs. **Roads that are not accessible to maintenance crews in trucks or ATVs will be inspected on foot and problem areas identified and treated immediately where feasible. Where not feasible, they will be prioritized, and included in the road management schedule. Truck and ATV use of roads not hydrologically disconnected will cease when such use results in rutting or displacement of road surface materials.**

S6-109 [2. The maintenance schedule will be completed on a three-year rotating basis in accordance with the following: Secondary management roads are likely to be in poorer condition and more remote, located in higher elevation, higher rainfall intensity areas of watersheds, and there are significantly more miles of them on the landscape. DFG does not understand the rationale as to why many of these roads should receive one-half to one-third the maintenance frequency of others on the schedule. In addition, mainline roads to be inspected annually are built to a higher standard, are more likely to have been upgraded, and are more accessible for storm repairs.

<u>Rotating Annual Schedule</u>	<u>Routine Maintenance Areas</u>
1	Smith River HPA
1	Coastal Klamath HPA (on northern side of the Klamath River) minus the Bear Creek RWU
2	Coastal Klamath HPA (on southern side of the Klamath River)
2	Blue Creek HPA plus the Bear Creek RWU
3	Interior Klamath HPA
3	Redwood Creek HPA
2	Coastal Lagoons HPA
1	Little River HPA
1	Mad River HPA minus the Boulder Creek RWU
2	North Fork Mad River HPA

Response to Comment S6-110

See response to Comment R1-114.

Response to Comment S6-111

Although not explicitly stated, the intent of the measure is to hydrologically disconnect road segments and drainage facilities to watercourses. The Services believe that the language is clear enough in its intent. See response to Comment S6-107.

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Humboldt Bay HPA plus the Boulder Creek RWU

3

Eel River HPA

Inspection Content

1. Simpson will conduct road inspections by driving accessible roads. Problems observed in connection with the drive-through will be documented, and a recommendation provided for the repair. DFG experience shows "drive-through" inspections will not be capable of detecting a significant percentage of the problems present on any given road segment. Drainage features are often obscured by vegetation or buried. Culvert inlets, outlets, and interiors are rarely visible from a truck. DFG strongly recommends inspections be conducted on foot or ATV, and drainage structures, inlets, and outlets be included in any road inspection. All permanent watercourse crossings should be permanently identified with a reflective metal stake and number/letter code to allow rapid identification of culverts.
2. The inspections will assess **and provide written recommendations regarding** the following:
 - a. **The degree of hydrologic connectivity of road segments and drainage facilities to watercourses.** Because this is an aquatic habitat conservation plan, inspections should focus on the need to reduce sediment input from roads. Hydrologic connectivity is the means by which most road sediment is delivered to watercourses. The recognition and treatment of all hydrologically connected road segments should be a priority in any maintenance inspection program.
 - a. b. Adequate **and effective** waterbar spacing, depth, interception of the ditch line, and complete diversion of water flow onto undisturbed soil.
 - b. c. Areas having poorly drained low spots or inadequately breached outside berms.
 - e. d. Ditches are open and properly functioning, **not downcutting or diverting,** ~~that~~ are free of debris that could plug the ditch or a culvert and cause a diversion of water onto the road surface.
 - d. e. Culverts are functioning properly **and culvert inverts are sound.**
3. Simpson will prioritize maintenance or repairs that are needed based on treatment immediacy (a subjective combination of event probability and potential sediment delivery evaluated as either low, moderate, or high). Simpson's goal will be to complete all the priority tasks prior to the winter period. If the priority workload exceeds that which can be accomplished in the current maintenance year, lower priority sites will be held over until the following maintenance year.

6.2.3.10 Emergency Inspections

Response to Comment S6-112

See response to Comment R1-115.

6.2.3.10.1 Emergency Inspection Trigger

If a storm occurs that produces three inches of precipitation or more in a 24-hour period at a gauge location identified below, or is otherwise of sufficient intensity to potentially trigger road drainage failures, then Simpson's timberlands staff will conduct emergency inspections of all accessible rocky roads in the corresponding region, to the extent the roads can be traveled without causing road damage during or immediately after such event. **Simpson will also conduct emergency inspections whenever other factors, including but not limited to significant antecedent rainfall, and rain on snow events, warrant.** How was the three inch in a 24 hour period threshold determined? Does this amount reflect the probability that rainfall intensity and amounts in the upper reaches of watersheds above the gauges may be double that at the gauges? Other factors (which we concede may not be easy to enforce) may be appropriately included here as indicated above. For example, if several one-half to one inch events occurred over several days or weeks (e.g. saturated conditions), followed by two inches per 24 hours for three consecutive 24 hour periods, the emergency inspection would not be triggered. However, this amount of precipitation could cause more damage to roads than a single, three inch event without significant antecedent rainfall.

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<u>Gauge Location</u>	<u>Associated Inspection Area</u>
Crescent City	Smith River HPA
Klamath River near Terwer Creek	Coastal Klamath and Blue Creek HPAs
Trinity River at Hoopa	Interior Klamath HPA
Redwood Creek at Orick	Redwood Creek HPA downstream of Dolly Varden and Coastal Lagoons HPA
O'Kane (Blue Lake)	Redwood Creek HPA upstream of Dolly Varden
Korbel	North Fork Mad River and Mad River HPAs
Eureka	Humboldt Bay, and Eel River HPAs

6.2.3.10.2 Emergency Inspection Repairs

1. Simpson will make repairs during the emergency inspections if hand labor can correct the problem.
2. Any major problems observed during emergency inspections that would require the use of heavy equipment for repair will be reported to a designated "storm response coordinator." The coordinator will prioritize and schedule repairs so that they are accomplished as soon as possible. If access is prohibited because of adverse conditions, these sites will receive priority for treatment during the following summer's road maintenance schedule.

6.2.3.10.3 Road Daylighting

Response to Comment S6-113

See response to Comment R1-117 and the response to Comment G10-52 with regard to “daylighting.” Further, see the response to Comment S6-73 regarding the respective roles of the Permit applicant and the Services in the development of an HCP. The Services believe that Green Diamond’s Operating Conservation Program, which includes AHCP/CCAA Section 6.2.3.10.3, meets ESA section 10(a) Permit issuance criteria (see Master Response 8).

Response to Comment S6-114

See the response to Comment S6-73 regarding the respective roles of the Permit applicant and the Services in the development of an HCP. The Services believe that Green Diamond’s Operating Conservation Program, which includes AHCP/CCAA Section 6.2.3.11.2, meets ESA Section 10 Permit issuance criteria (see Master Response 8).

S6-113

1. Simpson will perform road daylighting where necessary and feasible to accelerate drying of roads and provide stable road surfaces for log hauling or other vehicular traffic. Within RMZs for Class I and II watercourses, no conifers trees will be cut that are recruitable to the stream channel, or where harvest could cause slope, bank, or channel de-stabilization. No trees larger than 16 inches dbh will be cut from the downstream side of Class I watercourse crossings. It may be more appropriate to apply additional lifts of rock to road surfaces at and approaching watercourse crossings than to propose to remove conifer overstory canopy and sources of LWD and disturb cut slopes to accelerate the drying rate of the road. DFG has observed at numerous locations on Simpson lands cut bank failures, slumping, and surface erosion associated with harvesting trees along recently daylighted roads. The loss of canopy over the road and existing cut slopes predisposes these sites to added surface erosion and wind throw of newly exposed trees, resulting in sediment input to inboard ditches and watercourses.
2. Simpson will evaluate daylighting within RMZs on a site-specific basis to determine where it will be necessary in order to accelerate drying of the road and provide a stable road surface. See above DFG comment.

6.2.3.11 Road and Landing Use Limitations

6.2.3.11.1 Turbidity Restrictions

1. Simpson will cease log hauling, heavy equipment hauling, road or ditch maintenance, road decommissioning, road upgrading, road construction, and use of landings when surface water is running off the road or landing, use of the road results in rutting, or use of any portion of a road or landing results in runoff of waterborne sediment in amounts sufficient to cause a visible increase in turbidity in any ditch or road surface that drains into a Class I, II or III watercourse.
2. Use of roads for log hauling, heavy equipment hauling, road or ditch maintenance, road decommissioning, road upgrading, road construction, and use of landings, will not resume until the road surface is well drained, firm, and has dried sufficiently to allow use without resulting in rutting, pumping of fines, or runoff of waterborne sediment in amounts sufficient to cause a visible increase in turbidity in any ditch or road surface that drains into a Class I, II or III watercourse. This criterion will apply any time of year (including during summer storms).

6.2.3.11.2 Seasonal Restrictions

S6-114

1. Simpson will carry out hauling or loading during the winter period only on hard packed, firm rock surfaces which do not rut or pump fines during use. (See DFG comments to 6.2.3.5.10 regarding rocking).
2. If unsurfaced roads have been hydrologically disconnected from watercourses and drainage facilities leading directly to watercourses, hauling and loading will be allowed on unsurfaced roads from May 1st through

Response to Comment S6-115

The Services believe that AHCP/CCAA Section 6.2.3.11.4 is adequate as written.

Regarding Plan enforceability, see Master Response 14.

May 14th if "early spring drying" occurs or from October 16th through November 15th if an "extended dry fall" occurs.

6.2.3.11.3 Helicopter Landing Areas

Helicopter service landing areas will be considered appurtenant to a THP and will be subject to the limitations described in 6.2.3.11.1 and 6.2.3.11.2.

6.2.3.11.4 ATVs, Pickups, and Vans

1. Simpson ~~may will use only~~ ATVs on unsurfaced seasonal roads during the winter period, **except ATV use of roads not hydrologically disconnected will cease when such use results in rutting or displacement of road surface materials.**
2. **If unsurfaced roads have been hydrologically disconnected from watercourses and drainage facilities leading directly to watercourses,** other vehicular use of seasonal roads will be allowed from May 1st through May 14th if "early spring drying" occurs, or from October 16th through November 15th if an "extended dry fall" occurs

S6-115

DFG has observed severe road surface displacement and sediment delivery to ditches and watercourse crossings can occur via repeated use of a saturated or wet, soft, seasonal road surface. For example, repeated use of the same wet unsurfaced road day after day by tree planting crews in remote areas can damage road surfaces as much as pickup truck traffic and can create a high risk for sediment delivery with the next significant rainfall.

3. Any damage caused to drainage or erosion control structures by using ATVs on any road will be repaired immediately following damage. DFG has observed the damage caused by repeated use of wet roads by ATVs results in road damage that cannot be repaired "immediately" due to the remote location, degree of rutting and road surface displacement, and inability to bring in heavy equipment until the dry season. This provision will likely not be enforceable.
4. ~~Exceptions for Seasonal road use for management~~ during the winter period of **roads not hydrologically disconnected for management, including include** fire control vehicles for site preparation burning, pickup access for transportation of monitoring supplies and equipment, and pickup trucks and vans for transportation of seedlings and reforestation crews **will cease when the road surface is soft and/or such use results in rutting or displacement of road surface materials.** Upon completion of each specified activity all drainage facilities will be returned to the condition prior to road use or brought up to a condition where they are functioning properly.

6.2.3.11.5 Landings on Roads within RMZs

1. Simpson will not use landings on roads (including roadside decking) within RMZs from October 16th through ~~June 1~~ **May 14th.**

Response to Comment S6-116

The restrictions provided in AHCP/CCAA Section 6.2.3.13 are intended to avoid dewatering of Class I waterbodies and only allow localized temporary dewatering on Class II watercourses. These restrictions have been specifically developed with the idea of protecting aquatic life in these drafting locations. See response to Comment R1-121 for measuring streamflow.

2. Ditchlines and drainage facilities associated with existing roads within RMZs that are used for landings or roadside decking during the summer period will be repaired and hydrologically disconnected from watercourses immediately following completion of operations and prior to October 16th.
3. Any proposed use of existing landings and roads within an RMZ will be discussed and mapped in THPs and also included on the THP map submitted to the Services. Alternatives to roadside decking in RMZs will be evaluated during the THP preparation. Simpson will select the most feasible alternative with the least amount of impact to the aquatic resource.

6.2.3.12 Emergency Road Repair

If there is an imminent threat to life, property, or public safety, or a potential for a massive sediment input with catastrophic environmental consequences, and the appropriate emergency response action is otherwise prohibited by this Section of this Plan, Simpson will notify the Services' designated contacts, but a formal notification will not be required prior to response actions being taken.

6.2.3.13 Water Drafting

Simpson will restrict its water drafting and use of gravity-fed water storage systems for timber operations as identified in this subsection. These restrictions will not apply to water drafting for fire suppression or wildfire. However, if a watercourse has larval tailed frogs, then the drafting requirements for the site will be modified to avoid temporary dewatering of the Class II watercourse or another drafting site will be used.

6.2.3.13.1 Within Class I Watercourse Channels

Water drafting for timber operations within the channels of Class I watercourses will conform with all of the following standards:

1. The pumping rate will not exceed 350 gallons per minute (**0.78 cubic feet per second (cfs)**).
2. The pumping or gravity fed lines to storage tanks will not remove more than 10% of the **instantaneous** daily above-surface flow.
3. Drafting will not occur in watercourses that have less than two **one cubic feet feet per second** surface flow. How will water truck operators know when this threshold is reached? Can they accurately gauge streamflow? Will they be trained? One cubic foot per second represents 449 gallons per minute. If Simpson were to divert 350 gallons per minute from a Class I watercourse flowing at one cfs, it would represent 78% of the surface flow. Drafting this amount may result in significant adverse impacts to streamflow and habitat structure for the Covered Species. **an unacceptably high amount**. A drafting rate not to exceed 10% of the surface flow of streams flowing more than two cfs is a more appropriate rate.

S6-116

Response to Comment S6-117

The Services have incorporated by reference the minimum design criteria specified in AHCP/CCAA Section 6.3.3.12 and believe that this is adequate and enforceable.

6.2.3.13.2 Within Class I Watercourse Impoundments

Water drafting for timber operations from impoundments within the channels of Class I watercourses that do not have surface outflow will conform with the following standards:

1. The pumping rate will not exceed 350 gallons per minute. **(0.78 cfs).**
2. Drafting or pumping to storage tanks will not reduce maximum pool depth by more than 10%.

6.2.3.13.3 Within Class II Watercourses or Impoundments

Except where Simpson has an approved site specific drafting plan from DFG which allows otherwise, gravity fed lines to storage tanks from within Class II watercourses or impoundments will not divert more than 10% of the instantaneous surface flow, and water drafting for timber operations from within Class II watercourses or impoundments will not reduce maximum pool depth by more than one-third and the pool will be fully recharged before any additional drafting occurs. Tank overflow will be continuously returned to the watercourse via a return line or non-erodible ditch, in the shortest distance possible and without the possibility of diversion out of the watercourse in case of tank, line, or valve failure.

6.2.3.13.4 Drafting Screen Specifications

Simpson will screen intakes, including gravity fed lines, in Class I and II watercourses. Simpson will install intakes in pools to avoid entrainment of amphibian larval stages. The screens will be designed to prevent the entrainment of all life stages of Covered Species and will meet the minimum design criteria specified in Section 6.3.3.12 of the Plan. The screen criteria should also be disclosed here as enforceable language.

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6.2.3.13.5 Herbicide Mix Trucks

Simpson will not use herbicide mix trucks to directly draft water from any watercourse.

6.2.3.14 Rock Quarries

6.2.3.14.1 Locations of New Rock Quarries

Simpson will not establish new rock quarries and borrow pits within a Class I or II RMZ

6.2.3.14.2 Portions of Existing Quarries within RMZs

Simpson will not use any portion of an existing rock quarry or borrow pit that is within 150 feet of a Class I watercourse, 100 feet of a Class 11-2 watercourse, or 70 feet of a Class 11-1 watercourse.

6.2.3.14.3 Turbidity

1. Simpson will carry out rock quarrying or rock extraction from borrow pits, or hauling operations associated therewith, so as not to cause a visible increase in turbidity in watercourses or hydrologically connected facilities which discharge into watercourses **during or following rainfall events. Surface drainage from the sites will be directed to stable forest floor locations which are hydrologically disconnected from watercourses.**
2. If an increase in turbidity does occur as the result of such operations, interim erosion control measures will be install and the operations causing the increase will be immediately ceased.

6.2.3.14.4 Overburden

Simpson will place overburden generated during development of rock quarries and borrow pits in a stable location away from watercourses and RMZs. The overburden disposal area will be grass-seeded and straw-mulched where **runoff from the disposal area may reach a Class I, II, or III watercourse or hydrologically connected drainage facility.**~~necessary.~~

6.2.3.15 Training

1. Simpson will provide the training specified below for all equipment operators and supervisors involved with the road plans specified in this Plan, and all foresters, as provided for his or her position. **The training courses will be mandatory.**
2. The training courses will be **required** ~~offered~~ every year for new employees or contractors who will be involved in the road plan. Refresher courses will be provided every two years as appropriate to review concepts and introduce any new state-of-the-art techniques.

6.2.3.15.1 Training Courses

The following training courses will be **required** ~~offered~~:

1. Basic training in road de commissioning (foresters, supervisors and operators);
2. Basic training in road location and design (foresters) and road construction (foresters, supervisors and operators);
3. Basic training in road upgrading (foresters, supervisors and operators);
4. Basic training in road maintenance (foresters, supervisors and operator s).

6.2.3.15.2 Training Course Format

Each of the above-listed courses will follow the following format:

1. Office and class-room-2-4 hours. Presentation of concepts and theory of road treatments review of the difference between typical past practices and currently acceptable methods; slide presentation depicting road-related problems and appropriate treatments; comparison of effective and ineffective treatments; question and answer session; **presentation of the adverse effects of road sediment to Covered Species and their habitats by a qualified Simpson fisheries biologist.**
2. Field workshop-6 hours. Viewing of sites depicting various untreated problems; review of road reaches which have been correctly and appropriately treated; review of road reaches or sites showing examples of partially or incorrectly applied treatments.
3. Practical field workshop-8 hours. Observation and participation in proper road treatments and demonstration projects actively underway; discussions with other operators on techniques and practices employed in designing, staging and applying proper road treatments, **and field observations of salmonid habitats and sediment pathways to watercourses.**
4. On-the-job training for foresters and supervisors-variable. Training on road design and layout; problem identification; problem quantification; prioritization; and development of cost-effective treatments.
5. On-the-job training for operators-2 to 6 months. Application of road treatments with technical oversight and review of road treatment practices and operations (beginning with regular, repeated field review and terminating in intermittent checking of new or unusual operations, as needed).

6.2.4 Harvest-Related Ground Disturbance Measures

6.2.4.1 Field Trials with Mechanized Equipment

Simpson will not conduct field trials with mechanized equipment for silvicultural operations unless it has provided assurances to the Services that the equipment will not cause compaction or soil displacement that is measurably greater than the equipment or methods previously used. Such assurances will be supported by available documented evidence.

6.2.4.2 Site Preparation Standards

Simpson will plan and execute harvest operations so as to facilitate the purposes of the site preparation conservation measures described in this subsection.

6.2.4.2.1 Design

Response to Comment S6-118

AHCP/CCAA Section 6.2.4.2.5 describes the desired post-operational fuel bed and forest floor attributes which reflects the meaning of limited consumption of the fuel bed. Also see AHCP/CCAA Section 6.2.4.2.4 #2 for examples of the non-targeted portions of the fuel bed.

Simpson will design all site preparation operations to limit the amount of ground and forest floor disturbance to that which is required for fuel reduction and reforestation operations.

6.2.4.2.2 Priority for Treatment

Simpson will plan site preparation operations so that areas having the greatest need of treatment for fuel reduction and/or reforestation access are assigned the highest priority for treatment.

6.2.4.2.3 Mechanized Site Preparation Methods

1. Simpson will minimize use of machine piling with tractor-and-brushrake; other mechanized methods or equipment will be used preferentially.
2. Use of mechanized site preparation methods will be limited to the period beginning ~~June 1~~ ~~May 4th~~ and ending October 15th.

6.2.4.2.4 Prescribed Fire Operations

Simpson will design prescribed fire operations to produce burns that have the following "low intensity" attributes:

S6-118

1. The burning operation will consume only a limited portion of the fuelbed. What portion of the fuel bed is "limited"? As stated, this is not defined or enforceable.
2. Non-targeted portions of the fuel bed, such as the duff layer and woody fuels greater than three inches in diameter, will be generally only lightly consumed.
3. The fires will tend to self-extinguish when they burn into a fireline or into an adjacent area with a continuous overstory canopy.

6.2.4.2.5 Desired Post-operation Fuelbed and Forest Floor Attributes

Simpson will use reasonable efforts to achieve the following attributes following site preparation:

1. Down woody material greater than 3.0 inches diameter to reflect the pre-disturbance condition throughout the prepared area.
2. The litter layer to be minimally displaced or consumed.
3. Bare mineral soil exposure that occurs through the displacement or consumption of logging slash and forest floor material to be less than 5% of the area of any harvest unit (skid trails and skyline roads are not included in the estimate of exposed area). **Areas of exposure in RMZs, EEZs, or ELZs greater than 5% will be treated with seed and mulch.**

6.2.4.2.6 Fireline Drainage

All firelines that are not in an RMZ or EEZ will have ~~waterbars drainage structures~~ adequate to prevent the delivery of sediments to RMZs, or EEZs, or hydrologically connected drainage facilities.

6.2.4.2.7 Fireline Construction with Tractors

1. Simpson will limit fireline construction with tractors to the period beginning ~~June 1 May 15th~~ and ending October 15th.
2. If the proposed fireline location may cause hillslope sediment delivery to a RMZ or EEZ adjacent to a Class I, II or III watercourse, then equipment use will be limited to slopes less than 45%.
3. If the proposed fireline location is not likely to cause sediment delivery to a RMZ, and if slopes are greater than 50%, then the tractors will operate only on fireline segments less than 100 feet.

6.2.4.2.8 Fireline Construction, Reconstruction, and Use within RMZs and EEZs

Simpson will limit fireline construction, reconstruction, and use within RMZs and EEZs as follows:

1. Firelines will only be constructed or reconstructed with hand tools.
2. Existing skid roads or firelines within RMZs or EEZs will be reconstructed for fireline usage only if they are located advantageously for fire containment. Reconstruction will only be done with hand tools, and only to the minimum width required for fire containment. All prior drainage failures on the existing skid roads or firelines will be remedied during reconstruction.
3. All constructed or reconstructed firelines within RMZs or EEZs will have drainage structures that will minimize the movement of sediments from the exposed fireline surface ~~and will be but are not~~ subject to the 100 square foot ground disturbance standard for seeding and mulching as described in Section 6.2.1, **unless determined by the RPF not to pose a threat of sediment delivery to a watercourse.**

6.2.4.3 **Release, Pre-commercial Thinning, and Commercial Thinning**

1. Simpson will use self-propelled, mechanized equipment for release and pre-commercial thinning operations only as specified in the seasonal limits on ground-based yarding.
2. The uses of logging equipment in commercial thinning operations are subject to all applicable limitations on felling, yarding and loading in 6.2.4.4 through 6.2.4.8 below.

6.2.4.4 **Measures Common to All Felling, Yarding, and Loading Operations**

1. Erosion control measures for the treatment of disturbed areas in RMZs or EEZs resulting from felling, bucking, and yarding activities will be implemented as provided in Section 6.2.1.
2. Any bare mineral soil exposure, greater than 100 square feet in RMZs or EEZs that is caused by logging activities, will be mulched and seeded or treated by other means prior the end of logging operations or prior to October 15, whichever comes first. Seeding will be at a rate of at least 30 pounds per acre and mulching to a depth of at least 2 inches (before settling) with 90% surface coverage.

6.2.4.5 Tractor, Skidder, and Forwarder Operations

6.2.4.5.1 Time of Year Restrictions

1. **Tractor, skidder, and forwarder operations will only occur during dry, rainless periods, regardless of time of year.**
2. Simpson will limit the construction and reconstruction of skid trails to the period beginning ~~June 1~~ ~~May 15th~~ and ending October 15th.
- 2.3. Ground-based yarding with tractors, skidders, and forwarders **will only may** occur from May 15th through October 15th on existing skid trails. This period for skid trail use (which excludes construction and reconstruction of skid trails) may be extended to include the periods May 1st to May 15th or October 16th to November 15th when the following procedures are followed:
 - a. Skid trail use will be carried out during this **extended** period so as to not cause ~~in~~ a visible increase in turbidity in watercourses or hydrologically connected facilities which discharge into watercourses **either during or following operations.** ~~1) If an increase in turbidity does occur as the result of such operations, interim erosion control measures will be installed and the operations causing the increase will be immediately ceased.~~
 - 2) ~~Use of skid trails by ground-based logging equipment will not occur when soil moisture conditions would result in (a) reduced traction by equipment as indicated by spinning or churning of wheels or tracks in excess of normal performance; (b) inadequate traction without blading wet soil, or (c) soil displacement in amounts that cause movement of waterborne sediments off of a skid trail surface.~~
 - 3) ~~If any of the foregoing conditions is caused during skid trail use, interim erosion control measures will be installed and the operation causing the condition will be immediately ceased.~~
 - b. Ground-based yarding operations will use minimal ground disturbing equipment without bladed skid trail construction or reconstruction to the maximum extent feasible. Where this is not feasible, yarding operations during this period will be limited to existing skid trails for ground-based equipment that are hydrologically disconnected from Class I, II, or III

- watercourses or drainage facilities that discharge into Class I, II, or III watercourses.
- c. Use of skid trails during the period will not occur within at least ~~last~~ 100 feet, slope distance, of the upper extent of any designated Class II watercourse, and on slopes greater than 30% within at least 100 feet of Class III watercourses. Long-line yarding or lifting logs with a shovel from outside these zones may occur as long as the skid trails **and furrows** are hydrologically disconnected from Class I, II, or III watercourses or drainage facilities that discharge into Class I, II or III watercourses.
 - d. During the period, all bare mineral soils greater than 100 square feet created by ground-based yarding that are within an RMZ or EEZ will be treated with seed, mulch or slash by the end of the working day. Such treatment outside the zones will be performed at the discretion of the RPF or Simpson's supervisor based on an evaluation of the potential of the site to deliver sediment to a watercourse or hydrologically connected facility, taking into consideration the potential for large storm events to cause sediment delivery.
 - e. During the period, prior to commencement of yarding operations, sufficient erosion control materials, including but not limited to straw, seed (barley seed and/or the Simpson's seed mix), and application equipment will be retained on-site or otherwise accessible (so as to be able to procure and apply that working day, or, if infeasible, the following morning) in amounts sufficient to provide at least two inches depth of straw with minimum 90% coverage, and 30 pounds per acre of Simpson's seed mix. In lieu of the above listed materials, native slash may be substituted and applied if depth, texture, and ground contact are equivalent to at least two inches straw mulch.
 - f. If operations expose an area of bare mineral soil late in the day and it is not feasible to completely finish erosion control treatment that day, the erosion control treatment may be completed the following morning prior to start of yarding operations provided there is no greater than a 30% chance of rain forecasted by the National Weather Service within the next 24 hours.)

6.2.4.5.2 Use on Steep Slopes

Simpson will not use ground-based yarding systems that require constructed skid trails on slopes over 45% unless greater soil or riparian zone disturbance would be expected from cable yarding due to unfavorable terrain that reduces skyline deflection and payload capability, or additional haul road construction would be required to accommodate the use of cable logging systems.

6.2.4.5.3 RMZ and EEZ Exclusions

Simpson will not use ground-based yarding, or skidding, equipment in RMZs or EEZs adjacent to Class I, II and III watercourses, except as provided in Sections 6.2.1, 6.2.3, and 6.2.4 of the Plan.

6.2.4.6 Skid Trails

1. During THP preparation, Simpson will **identify** existing skid trails within the proposed harvest area that are diverting a watercourse **or show evidence of having discharged sediment to a watercourse**, have a potential to divert a watercourse **or discharge sediment to a watercourse**, or are not properly draining and will have them evaluated for repair by a **qualified** fisheries biologist, hydrologist, geologist, or other qualified personnel.
2. **Prior to the completion of timber operations Simpson will identify existing skid trails within the harvest area that may discharge to a watercourse, have a potential to divert a watercourse, or are not properly draining and will have them evaluated for repair by a qualified fisheries biologist, hydrologist, geologist, or other qualified personnel.**
3. Necessary repairs will be performed by the completion of timber operations, **or prior to October whichever occurs first.**
4. **Skid trail approaches to roads will be planned and constructed to intercept the road as far from watercourse crossings as feasible. Skid trail approaches to roads will not occur between the last effective rolling dip or ditch relief culvert and the watercourse crossing.**
5. **Particular attention will be given to avoid skid trail runoff to hydrologically connected ditches.**

6.2.4.7 Feller-Buncher and Shovel Logging Operations

1. Where appurtenant haul roads are not surfaced for all weather conditions or do not have appropriate drainage facilities, or when the operation involves use of constructed skid trails for skidding and forwarding, Simpson will not carry out feller-buncher or shovel logging operations during the winter period.
2. Feller-buncher and shovel logging operations will cease during storm events where logging operations, combined with significant rainfall, are likely to cause delivery of sediments in RMZs or EEZs along Class I, II or III watercourses.
3. Forwarding over constructed skid trails, when used in conjunction with the feller-buncher or shovel operation, will be governed by 6.2.4.3.

6.2.4.8 Skyline Yarding Operations

6.2.4.8.1 Cable Logging Suspension

Simpson will fully suspend logs above the ground when cable yarding across Class I and II RMZs, and to the **maximum** extent practicable when cable yarding across Class III EEZs.

6.2.4.8.2 Bare Soil Exposure Treatment

1. Simpson will mulch and seed or treat by other means areas of bare soil exposed in skyline roads within RMZs or EEZs that are greater than 100 square feet and are caused by logging activities prior to the end of logging operations or prior to October 15th, whichever occurs first.
2. Where sections of skyline road upslope of RMZs or EEZs have created furrowing of the ground which can channelize surface flow and result in gullying and possible delivery of sediments into or through the RMZ or EEZ, those affected areas will be treated with the installation of one hand-built waterbar per 50 lineal feet of affected skyline road, except in areas of known erodible soil types and on formations or slopes greater than 65%, where waterbars will be placed after a linear disturbance distance of 30 feet and the spacing between waterbars thereafter will be 20 feet. **Closer spacing will be used if needed to effectively hydrologically disconnect the affected area from watercourses or drainage facilities which discharge to watercourses.**

6.2.4.9 Helicopter Yarding Operations

In harvest planning, Simpson will consider helicopter yarding as an alternative to ground-based or skyline logging methods where road construction to access harvest units would traverse overly steep and/or unstable terrain, and will justify the final choice of logging method in the THP.

6.2.4.10 Loading and Landing Operations

6.2.4.10.1 Landing Construction

Simpson will minimize the need for landing construction to the extent practicable, considering safe operation of equipment.

6.2.4.10.2 Landing Size

Simpson will minimize the size of new landings to the extent practicable, considering safe operation of equipment, by designing them for shovel, or heel-boom, loaders instead of front-end loaders.

6.2.4.10.3 Loading Surfaces and Operations

Simpson will not conduct loading on unrocked surfaces **or transport loading equipment on unrocked roads** during the winter period except from May 1st through ~~June 1~~ ~~May 14th~~ if early spring drying occurs, or October 16th through November 15th if extended dry fall occurs.

6.2.5 Effectiveness Monitoring Measures

Effectives monitoring measures include four categories of projects and programs: "Rapid Response Monitoring," "Response Monitoring," "Long-term Trend Monitoring/Research," and "Experimental Watersheds Program." The projects and programs in each category are as follows:

Rapid Response Monitoring

Summer Water Temperature Monitoring
Property-wide Water Temperature Monitoring
Class II BACI Water Temperature Monitoring
Spawning Substrate Permeability Monitoring
Road-related Sediment Delivery (Turbidity) Monitoring
Headwaters Monitoring
Tailed Frog Monitoring
Southern Torrent Salamander Monitoring

Response Monitoring

Class I Channel Monitoring
Class III Sediment Monitoring

Long-term Trend Monitoring/Research

Road-related Mass Wasting Monitoring
Steep Streamside Slope Delineation Study
Steep Streamside Slope Assessment
Mass Wasting Assessment
Long-term Habitat Assessments
LWD Monitoring
Summer Juvenile Salmonid Population Estimates
Out-migrant Trapping

Experimental Watersheds Program

Area-limited Effectiveness Monitoring Projects and Programs
BACI Studies of Harvest and Non-Harvest Areas under the Plan
BACI Studies of Conservation and Management Measures
New and Refined Monitoring and Research Protocols

The monitoring projects and programs described in 6.2.5.1 through 6.2.5.4 will be designed using the considerations identified in subsection 6.3.5. Rapid Response, Response Monitoring, and Long-term Trend Monitoring/Research will be implemented using the protocols identified or developed as described in Appendix D. The Experimental Watershed Program will be implemented using the protocols identified in Appendix D where appropriate and new or refined protocols developed in response to monitoring results.

The criteria for issuance of an incidental take permit pursuant to Section 10 of the Endangered Species Act include the stipulation that the effects of "take" are mitigated to the maximum extent practicable. Federal policy pertaining to biological objectives and monitoring of habitat conservation plans (Federal Register (including 65 FR 35251) require that the specificity of monitoring is commensurate to the risk placed on covered

Response to Comment S6-119

See Master Response 1 and the response to Comment S6-30.

Response to Comment S6-120

See AHCP/CCAA Section 6.3.5 and Appendix D.

species by the proposed covered activities. The following comments on the subject AHCP section pertaining to the monitoring approach are presented with these criteria and policies in mind.

S6-119

One of the main concerns with this proposed monitoring program is the use, in many cases, of current conditions in the managed landscape as the standard for comparison of prescription effectiveness and in development of thresholds or acceptable levels for adaptive management. Current conditions in the managed landscape are often indicative of substantial impact in terms of habitat characteristics and populations. So use of these baseline conditions as the only standard for measuring success would provide any response in the proposed plan if existing impacted conditions did not improve. No improvement of baseline habitat conditions for species of threatened status may be construed as precluding the recovery of these species. An effectiveness monitoring program with incorporation of trending toward desired habitat conditions seems most appropriate and compatible with AHCP/CCAA program objectives and would also be more compatible with the intent of related state statutes. The above-mentioned habitat conditions include, but are not necessarily limited to, suitable temperatures, sediment regimes, and LWD for the Covered Species.

The EIS states that the proposed plan would "improve the overall condition of habitat for the covered species in the Action Area." To support this assertion, hypothesis testing and adaptive management thresholds should include statistical analyses centered on assessment of significant improvement of parameters monitored as compared to areas harvested prior to implementation of the proposed plan. These trend assessments could be scheduled for every five years since trends would take time to become established and would be subject to annual variation.

The monitoring program for the proposed Simpson AHCP possesses several key features that could go a long way toward successful characterization of conditions in the managed landscape over time. One feature is the use of preliminary data collected in many of the projects as a planning tool. One way to add to the value of this preliminary data would be to determine and report approximate sample sizes that may be necessary to detect statistically significant differences. Another feature is the use of studies designed around specific questions and objectives. Studies such as these are often more productive than collection of general monitoring data with the hopes of detecting trends. Simpson's effort represents a combination of general monitoring and studies with specific objectives. Some of the following comments are centered on ways to more closely align the studies with the objectives stated in Section 6.1.2.

S6-120

One of the important points under consideration for the proposed AHCP is whether the monitoring is of a sufficient level to detect changes in habitat quality that would affect populations of Covered Species. As they stand now the monitoring project descriptions in this section titled "Simpson's Operating Conservation Program" are lacking in basic information necessary for an understanding of the extent of the monitoring projects and how each project is related to the objectives. Each of the following project descriptions should contain:
(a) the intended number of sites and HPAs in which this sampling will occur,
(b) how often and what time of year they will be sampled, and

Response to Comment S6-121

See Master Response 14.

Response to Comment S6-122

The current number and location of water temperature monitoring stations will continue to change based on the location of THP activities within the HPAs. In addition, the number of sites in each HPA to be monitored have not been determined, and therefore, are not currently available. The Service's believe that a Plan Area-wide map depicting the location of temperature monitoring sites would be at such a gross scale that the information would not be useful.

See AHCP/CCAA Appendix D, Section 1.2.2.2 for stream selections for the property-wide summer water temperature monitoring.

Response to Comment S6-123

See response to Comment S6-122.

Response to Comment S6-124

See response to Comment S6-122.

Response to Comment S6-125

As provided in AHCP/CCAA Appendix C, Section 5.2.2.3, it is apparent that the response of water temperature to timber harvest in small headwater streams is complex. Results from the BACI water temperature study were inconclusive, and therefore, could

(c) what types of adaptive management might result from the analysis.

Some of this information is presented in Appendix D and in Section 6.3, however, this information should be presented as part of the Operating Conservation Program for the sake of clarity in interpretation.

S6-121 [The details on sampling and action thresholds have not been determined for several projects. As this information is not available for consideration by the Services or for reviewing agencies in the public comment period prior to approval, provisions should be made within this enforceable section for review and input by the Services and by other agencies if state approval is sought.

6.2.5.1 Rapid Response Monitoring

6.2.5.1.1 Property-wide Summer Water Temperature Monitoring (comments for this section are also based on information found in section 6.3.5.2.1 and D.1.2)

Simpson will monitor summer water temperatures annually at sites in Class I and Class II watercourses across the Plan Area using the protocols identified in Appendix D.1.2. This monitoring will document the highest 7DMAVG, 7DMMX, and seasonal water temperature fluctuations for each monitoring site.

S6-122 [How many sites in each HPA will be sampled? A map of temperature monitoring sites should be included here so that coverage can be assessed. The emphasis in choosing future sampling sites should be on coho-bearing Class I watercourses on the edge or out of the coastal fog zone and include more Class II-2 watercourses and any Class II-1 watercourses that flow through the warmest part of the season.

S6-123 [As noted in the temperature objective section, sites with greater than 10,000 acres of drainage area should not automatically be dismissed from monitoring. Any sites where adjacent and upstream timber management activities may have influence on water temperature should be considered for monitoring.

6.2.5.1.2 Class II BACI Water Temperature Monitoring (comments for this section are also based on information found in section 6.3.5.2.2 and D.1.3)

Simpson will conduct BACI studies of water temperatures before and timber harvesting in selected reaches of Class II watercourses using the protocol described in Appendix D.1.3. The goal is to assess potential effects of harvesting and the adequacy of riparian buffers by comparing maximum temperature differentials across fixed length of stream.

S6-124 [How many sites in each HPA will be sampled? Why not use the pilot study data to estimate the sample sizes necessary to detect significant differences under the variability of the existing data? As mentioned above, efforts should be made to focus most of the future sample locations in areas on the edge and outside the coastal fog zone.

S6-126 [Two years of pre-treatment data should be obtained to reduce the risk of having an atypical reference year. Part of the strength in the BACI analysis is the ability to

not be used to estimate the sample sizes necessary to detect significant differences.

Response to Comment S6-126

See response to Comment S6-125.

Response to Comment S6-127

It is premature to discuss the specific types of adaptive management that could occur, depending on trends in permeability. See Master Response 15 regarding the adaptive management reserve account.

Response to Comment S6-128

The protocol in AHCP/CCAA Appendix D, Section 1.5 identifies numerous independent variables that will be included in the monitoring project, such as rainfall intensity, length (or area) of road contributing to a watercourse, amount and type of road use, status of the road, etc.

Response to Comment S6-129

Moving the substrata for the monitoring may bias the “after” sampling results. However, based on past monitoring efforts of the “after” sites, Green Diamond found that the tailed frog population numbers have large annual variances. This may be due, in part, to the loosening of the substrate, which encourages use by tailed frogs. Many of the monitoring sites have at least two years of sampling data.

Response to Comment S6-130

See response to Comment S6-127.

S6-126

compare a stream stretch to itself as well as to a control, if the pre-treatment data is anomalous, you have lost that strength.

6.2.5. 1.3 Spawning Substrate Permeability Monitoring (comments for this section are also based on information found in section 6.3.5.2.3 and D.1.4)

Simpson will monitor spawning gravel permeability in selected Class I watercourses throughout the Plan Area to determine if conditions are suitable for the fish Covered Species and to track trends in permeability. Several Plan Area sites in each HPA will be monitored using the protocol described in Appendix D.1.4.

S6-127

Sampling at spawning time seems to be most appropriate, but must be done in a way so as to minimize potential take. A take permit would be required by DFG. What types of adaptive management would occur with negative or positive trends in permeability?

6.2.5. 1.4 Road-related Sediment Delivery (comments for this section are also based on information found in section 6.3.5.2.4 and D.1.5)

Simpson will monitor the road-related delivery of fine sediments into Plan Area streams (turbidity) and evaluate the effectiveness of the road upgrading measures in reducing those inputs. Turbidity will be measured immediately above and below Class II-1 and II-2 watercourse crossing using the protocol identified in Appendix D.1.5. There will be one permanent continuous monitoring station in each of the four drainages included in the Experimental Watersheds Program (see 6.2.5.4).

S6-128

This study of chronic sediment delivery from stream crossings and connected road surfaces would be the appropriate place to incorporate comparisons between roads of different usage levels and different surfaces. These variables are more likely to play a role in the chronic delivery rather than in the Road-related Mass Wasting study.

6.2.5.1.5 Tailed Frog Monitoring (comments for this section are also based on information found in section 6.3.5.2.5 and D.1.6)

Simpson will monitor changes in larval populations of tailed frogs in the Plan Area using a BACI experimental design as described in Appendix D.1.6. Treatment and control sites will be monitored to determine if timber harvesting under the Plan has a measurable effect on the larval populations in the Plan Area. Long-term changes in tailed frog populations across the Plan Area also will be monitored.

S6-129

Are there possible effects to sampling the habitats by removal of all of the loose substrate that would bias “After” sampling toward showing adverse effect? Has Simpson returned to the sampled stretch within a few weeks of sampling to see if sampling influences larval distribution? This would be important to establish for the Before – After part of the BACI design. How much year to year fluctuation is there in larval populations? Would one year of pre-treatment data be enough?

S6-130

What types of adaptive management would occur with negative or positive trends in larval tailed frog populations?

Response to Comment S6-131

Moving the substrata for the monitoring may bias the “after” sampling results. However, based on past monitoring efforts of the “after” sites, Green Diamond found that the southern torrent salamander population numbers have very little annual variances. Many of the monitoring sites have at least two years of sampling data.

Response to Comment S6-132

See response to Comment S6-127.

Response to Comment S6-133

As provided in AHCP/CCAA Section 4.4.2.6.4, there are five long-term channel monitoring locations within the Coastal Klamath HPA, including one on Tectah Creek.

The two sites that have thalweg measurements alone are the North Fork Mad River and Hoppaw Creek.

Response to Comment S6-134

The Class III sediment monitoring is based on the riparian management measures presented in AHCP/CCAA Section 6.2.1.5. The commenter did not provide any rationale as to why to include the additional treatment to the study.

Response to Comment S6-135

The Mass Wasting Assessment (see AHCP/CCAA Section 6.2.5.3.4 and Appendix D, Section 3.5) will be designed to evaluate relationships between timber management and mass wasting processes including headwall swales.

6.2.5.1.6 Southern Torrent Salamander Monitoring (comments for this section are also based on information found in section 6.3.5.2.6 and D 1)

Simpson will monitor changes in the persistence of sub-populations of southern torrent salamanders in the Plan Area using a BACI experimental design as described in Appendix D.1.6. Treatment and control sites will be monitored to determine if timber harvesting under the Plan has a measurable effect on the persistence on sub-populations in the Plan Area. Long-term changes in southern torrent salamander populations across the Plan area will be monitored.

S6-131 [Are there possible effects to sampling the habitats by turning the substrate by hand or by rake that would bias “After” sampling toward showing adverse effect ? Has Simpson returned to the sampled stretch within a few weeks of sampling to see if sampling influences salamander distribution? This would be important to establish for the Before – After part of the BACI design. How much year to year fluctuation is there in larval populations? Would one year of pre-treatment data be enough?

S6-132 [What types of adaptive management would occur with negative or positive trends in sub-populations of southern torrent salamanders?

6.2.5.2 Response Monitoring

6.2.5.2.1 Class I Channel Monitoring (comments for this section are also based on information found in section 6.3.5.3.1 and D.2.2)

Simpson will measure monitoring reaches in Class I watercourses in the Plan Area at least every other year for the duration of the Plan, using the protocol identified in Appendix D.2.2. The measurements will include cross-sectional and thalweg profiles, substrate size distributions, and bankfull and active channel widths.

S6-133 [The map indicates a monitoring reach in the Coastal Klamath HPA that has not been identified in the sections describing this project. Is there a site on Tectah Creek? Which two sites have thalweg measurements alone?

6.2.5.2.2 Class III and Headwall Swale Sediment Monitoring (comments for this section are also based on information found in section 6.3.5.3.2 and D.2.3)

Simpson will monitor sediment delivery from Class III watercourses using a BACI design, as described in Appendix D.2.3. The collected data will be analyzed to determine the amount of sediment delivered from Class III watercourses following timber harvesting. This monitoring will occur in the drainages designated for the Experimental Watersheds Program (see 6.2.5.4).

S6-134 [An additional treatment of retention of hardwoods and non-merchantable conifers for 50 feet in the ELZ in Tier A watercourses should be added to the study for completeness of monitoring and guidance of adaptive management.

S6-135 [Effectiveness monitoring of headwall swale prescriptions should be included here.

6.2.5.3 Long-term Trend Monitoring/Research

Response to Comment S6-136

The Services believe that the SSS Delineation Study, when combined with other review and enforcement measures, such as those described in Master Response 14 and the SSS Assessment (see AHCP/CCAA Appendix D, Section 3.4), provides for review and allows for modifications to be made when necessary. The Services believe that the SSS Delineation Study is adequate as written.

6.2.5.3.1 Road-related Mass Wasting Monitoring (comments for this section are also based on information found in section 6.3.5.4.1 and D.3.2)

Simpson will monitor the effectiveness of the road upgrading and decommissioning measures in reducing the frequency and severity of sediment inputs from road-related mass wasting. Monitoring will follow the protocols discussed in Appendix D.3.2 and will entail before and after examination of sediment inputs from upgraded and decommissioned roads and comparison of sediment inputs from upgraded and non-upgraded roads. Implementation will occur within the four drainages of the Experimental Watershed Program (see subsection 6.2.5.4).

One of the main sediment objectives stated in Section 6.1.2.2.4 is to reduce the amount of road-related sediment delivery at high and moderate priority sites by more than 46% within the first 15 years. Comparison of upgraded and unimproved crossing failures across all HPAs should be undertaken, instead of just the four experimental watersheds. The question of how much sediment do upgraded crossings deliver when they fail compared to pre-upgrade estimates should be asked regardless of usage and surface factors.

6.2.5.3.2 Steep Streamside Slope Delineation Study (comments for this section are also based on information found in section 6.3.5.4.2 and D.3.3)

Simpson will complete the SSS Delineation Study ~~within seven years after the effective date of the Permits~~ to modify the initial minimum slope gradient and maximum slope distances stated in 6.2.2.1 (Slope Stability Measures). The study will determine minimum slope gradient and maximum slope distance for Plan Area lands in each HPA based on a percentage of the measured cumulative sediment delivered to watercourses from shallow landslides originating from within the streamside slopes. The study will be conducted as described in Appendix D.3.3. **The Services will be consulted with the resulting data summaries from each HPA. Any modifications of the initial defaults will be made with review and approval by the Services. While the opening balance of the AMRA may be revised upward based on this new information, the opening balance will not be reduced below that settled upon in the signed agreement.**

An immediate change in the initial default slope gradients and distances to adjust protection according to existing slides in each HPA with only 30 day notice and no provision for review and agreement by the Services does not appear appropriate. It appears the only mention of the Services' involvement in this revision is in Appendix D.3.3 where it is stated "modified slope and distance criteria for each HPA may be applied starting on the 30th day after a letter of notice with a summary map that summarizes the data and describes the findings of the data analysis for each HPA is sent to the Services." This is not found in the sections that have been designated as enforceable and does not provide for a full review and agreement by the Services before changes are made.

These initial default parameters were determined through consultation with the Services in development of the AHCP and are being considered during the public comment period as part of the proposed AHCP. How can they be revised in less than a year

S6-136

Response to Comment S6-137

See Master Response 16.

Response to Comment S6-138

AHCP/CCAA Appendix D, Section 3.4 provides specific information regarding how data will be collected and analyzed during the SSS Assessment. When read in its totality, AHCP/CCAA Appendix D, Section 3.2 clearly describes the purpose of (and differences among) the SSS Delineation Study, SSS Assessment, and the Mass Wasting Assessment. Also, see response to Comment S6-141.

Response to Comment S6-139

See Master Response 16.

without full review? How can the parameters for individual HPAs be revised without consultation and agreement by all parties?

This first phase of the delineation study does not fall under Effectiveness Monitoring. This phase is a continuation of the development of initial default prescriptions. The resulting information from this study should be given adequate review and approval by all parties. It also appears that the process of data collection, analysis and decisions on default adjustment must be made at such a pace as to preclude full verification of methods, data, and interpretation. In order to consider modification to all 11 HPAs by the seven year deadline, only six to eight months would be allocated to the determination for each HPA. Without peer review and the Services' review of the process or any defined limits on the final default there are no assurances these measures will minimize and mitigate take to the maximum extent practicable.

Increases in slope gradient or decreases in slope distance should not be considered until a significant portion of the HPA in question has been harvested under the initial Slope Stability Measures and the prescriptions have been evaluated after a period of stressing storms, for example, 20 year return interval storm events. Decreases in slope gradient and/or increases in slope distances should be made at any time, if data suggests that the initial defaults are not effective in reducing the sediment delivery from management-related landslides.

S6-136

The level of sediment reduction proposed is subject to debate. It is not apparent how the 70% sediment reduction proposed in the second sediment objective would minimize impact to the maximum extent practicable or why the focus on 60% cumulative sediment delivery is appropriate for setting mitigation goals in all HPAs except for Blue Creek and Coastal Klamath HPA.

S6-137

6.2.5.3.3 Steep Streamside Slope Assessment (comments for this section are also based on information found in section 6.3.5.4.3 and D.3.4)

Simpson will assess the effectiveness of the SSS prescriptions by collecting and analyzing data relevant to landslides in SSS zones. Data collection will occur over the first 15 years of the Permits' term. Data analysis will begin when data collection is complete. This sentence could easily be left out, while more specific information should be included about what data "relevant to landslides in SSS zones" will be collected and analyzed, and how this assessment differs from the SSS Delineation Study or the Mass Wasting Assessment. Data collection and analysis will occur as described in Appendix D.3.4.

S6-138

In section 6.3.5.4.3 and in D.3.4 the standard of comparison is stated as

"...measures are designed to be at least 70% effective at preventing management-related sediment delivery from landslides compared to that from appropriate historical clear-cut areas".

S6-139

Presumably this means the areas cut under the SSS prescriptions should be 70% more effective at preventing sediment delivery than historical clearcut area. The sentence, as it stands, could mean 70% as effective which is less effective than historic conditions.

Response to Comment S6-140

The establishment and role of the scientific review panel has already been provided in AHCP/CCAA Section 6.2.6.1.3., and the Services do not believe it is necessary to duplicate it here.

Response to Comment S6-141

The goal of the MWA is to examine relationships between mass wasting processes and timber management practices, regardless of location and timber management prescriptions. The road-related mass wasting monitoring project is designed specifically to monitor the effectiveness of the road upgrading and decommissioning measures in reducing the frequency and severity of road-related course sediment inputs. The objectives of the SSS Assessment are to collect data relevant to landslides in SSS zones and to determine the effectiveness of the SSS conservation measures by comparative analysis of cumulative sediment delivery volumes and associated data.

Response to Comment S6-142

As provided in AHCP/CCAA Section 4.3.2 and Appendix C, Section 1.1, Green Diamond assessed 16 streams, and an additional 42 streams were assessed by four other organizations, for a total of 58 streams assessed between 1994 and 1998. The number of streams provided in AHCP/CCAA Section 6.3.5.4.5 and Appendix D, Section 3.6 were wrong, and have been corrected.

S6-139

In terms of resource protection, reference areas usually reflect the desired state, and effectiveness at trending toward the desired state is sought. With this in mind, minimizing sediment delivery from SSS slides as compared to modern uncut second growth slides is appropriate.

Any alternative prescriptions developed through onsite geologic review should be monitored for effectiveness.

S6-140

The establishment and role of the scientific review panel should be stated, here, in the enforceable section of the AHCP, as well.

6.2.5.3.4 Mass Wasting Assessment (comments for this section are also based on information found in section 6.3.5.4.4 and D.3.5)

Simpson will conduct a Mass Wasting Assessment (MWA) to examine the relationships between mass wasting processes and timber management practices. A preliminary MWA will be completed within the seven years after the Permits' effective date and at a minimum will include a landslide inventory and reporting of statistics collected to date. A final MWA will be completed within 20 years after the Permits' effective date and will include an updated landslide inventory and identification of patterns or trends in mass wasting processes as they relate to management practices. Both the preliminary and final MWA may be done incrementally across the Plan Area, with results presented as they become available or in a single report. The preliminary and final MWA will be conducted as described in Appendix D.3.5.

S6-141

It is not clear how this data analysis differs from the Steep Streamside Slope Assessment or the Road-Related Mass Wasting Monitoring. Does this project include assessment of shallow- and deep-seated landslides and effectiveness prescriptions regardless of whether they are in SSS zones?

6.2.5.3.5 Long-term Habitat Assessments (comments for this section are also based on information found in sections 4.3.2, 6.3.5.4.5, C.1.1, and D.3.6)

Simpson will assess channel and habitat types of selected streams in the Plan Area every ten years during the Plan duration, beginning in 2004-2005. The assessments will be coordinated with LWD Monitoring (6.2.5.3.6) and will be conducted as described in Appendix D.3.6.

S6-142

A map indicating habitat assessment sites should be included for an understanding of the extent of coverage of Class I habitat information. How many streams will be continually surveyed? Section 6.3.5.4.5 indicates 46 original streams will be sampled, Section D.3.6 states sampling will be repeated on the original 56 streams, Sections 4.3.2 and C.1.1 describe 58 streams that were originally sampled.

6.2.5.3.6 LWD Monitoring (comments for this section are also based on information found in sections 6.3.5.4.6 and D.3.7)

Simpson will conduct LWD surveys on the stream reaches selected for the Long-term Habitat Assessments (see 6.2.5.3.5). Abundance and size of LWD will be inventoried.

Response to Comment S6-143

As noted in AHCP/CCAA Appendix D, Section 3.7.1, recruitment of potential LWD into the stream channel is a highly stochastic process that occurs over long time scales. Therefore, the development of specific LWD thresholds for individual watercourses would be very difficult.

Response to Comment S6-144

Green Diamond has agreed to consider including these streams in its survey.

S6-143

Monitoring will occur every ten years during Plan implementation, beginning in 2004-2005, and will be conducted as described in Appendix D.3.7.

Identification of an instream threshold for LWD could be used to identify areas that currently have sufficient instream levels of LWD, which may open up more harvesting options. This threshold might also be met with active addition of LWD from outside the RMZ, such as those placed by DFG and Simpson in Ah Pah Creek, among others.

6.2.5.3.7 Summer Juvenile Salmonid Population Estimates (comments for this section are also based on information found in section 6.3.5.4.5 and D.3.8)

Simpson will conduct sampling surveys each summer to estimate young of the year coho and age 1 + steelhead and coastal cutthroat trout. As described in Appendix D.3.8, the methodology developed by Dr. Scott Overton of Oregon State University (retired) and Dr. David Hankin of Humboldt State University, as previously refined by Simpson will be used.

S6-144

To increase coverage of sampling over the HPAs, streams such as Ah Pah or Tectah in the Klamath basin, as well as Ryan Creek and Salmon Creek near Humboldt Bay should be considered for monitoring.

6.2.5.3.8 Out-migrant Trapping (comments for this section are also based on information found in section 6.3.5.4.6 and D.3.9)

Simpson will conduct out-migrant trapping annually in the Little River HPA to monitor smolt abundance, size, and out-migration timing. The overwinter survival of juvenile coho also will be estimated based on a comparison of out-migrant trapping results and summer juvenile population estimates from 6.2.5.3.7. Trapping will occur as described in Appendix D.3.9. The Little River HPA is one of the four drainages designated for the Experimental Watersheds Program. Out-migrant trapping may be expanded to the other three experimental watersheds (see 6.2.5.4).

Expansion of out-migrant trapping to the other experimental watersheds should be second in priority only to RMZ stand monitoring for any new monitoring.

6.2.5.4 Experimental Watersheds Program

Simpson will designate the Little River in the Little River HPA, South Fork Winchuck River in the Smith River HPA, Ryan Creek in the Humboldt Bay HPA, and Ah Pah Creek in the Coastal Klamath HPA as experimental watersheds for additional monitoring and research on the interactions between forestry management and riparian and aquatic ecosystems may occur. The four watersheds were selected because they are representative of different geologic and physiographic provinces throughout the Plan Area.

Simpson will conduct the following types of monitoring and research in the four watersheds:

1. Effectiveness monitoring projects and programs that due to their complexity and expense of implementation can only be applied in limited regions (these include turbidity

Response to Comment S6-145

The Services believe that the property-wide temperature monitoring program, as proposed, provides appropriate coverage for the Plan Area. Further, see the response to Comment S6-73 regarding the respective roles of the Permit applicant and the Services in the development of an HCP.

monitoring (6.2.5.1.4), Class III sediment monitoring (6.2.5.1.4), and road-related mass wasting monitoring (6.2.5.2.2);

2. BACI studies of harvest and non-harvest areas, allowing for more effective evaluation of conservation measures and increased understanding of the effects of forest management on the habitats and populations of the Covered Species.

3. BACI studies of conservation and management measures, allowing for a refinement of measures and an assessment of the relative benefits of different measures under the Plan; and

4. Development and implementation of new or refined monitoring and research protocols.

In addition, Simpson may expand Out-migrant Trapping in the Little River HPA to one or more of the other experimental watersheds.

No monitoring or research which involves the application of measures other than those prescribed in this Plan will occur without the concurrence of the Services.

6.2.5.5 Monitoring Thresholds for Rapid Response and Response Monitoring

Measurable thresholds that will trigger management responses when exceeded will be established for all Rapid Response and Response Monitoring projects and programs. Each project/program will have a "yellow light" and "red light" threshold that triggers different levels of review and response. Thresholds that have already been established and the process for establishing thresholds for the other projects/programs are described in this subsection.

6.2.5.5.1 Property-wide Temperature Monitoring

S6-145

Temperature monitoring should not be suspended in all watercourses with drainages over 10,000 acres, as implied on p. D-7.

Yellow and red light thresholds have been established for Property-wide Temperature Monitoring and are as follows:

1. The yellow light threshold in Class I and II watercourses with drainage areas generally less than 10,000 acres is:
 - a. A 7DMAVG water temperature above the upper 95% PI, as described by the regression equation: $\text{Water Temperature} = 14.35141 + 0.03066461x$ square root Watershed Area; or
 - b. Any statistically significant increase in the 7DMAVG water temperature of a Class I or II watercourse where recent timber harvest has occurred, which cannot be attributed to annual climatic effects.