UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to NMFS No:
2008/02929 (FS)
2008/02951 (BLM)

July 10, 2008

Mr. Dallas Emch
Forest Supervisor
Willamette National Forest
211 East 7th Avenue
Eugene, Oregon 97401

Ms. Virginia Grilley
Eugene District Manager
Bureau of Land Management
2890 Chad Drive
Eugene, Oregon 97440

Mr. Gary Larsen
Forest Supervisor
Mt. Hood National Forest
16400 Champion Way
Sandy, Oregon 97055

Ms. Cathy Harris
Acting Salem District Manager
Bureau of Land Management
1717 Fabry Road SE
Salem, Oregon 97306

Re: Reinitiation of Endangered Species Act Section 7 Informal Consultation for the 2007-2009 Thinning Timber Sales Programmatic on the Mt. Hood and Willamette National Forests and Portions of the Eugene and Salem Bureau of Land Management Districts, 22 Watersheds within the Oregon Portion of the Lower Columbia/Willamette River Recovery Domain

Dear Mr. Emch, Ms. Grilley, Mr. Larsen, and Ms. Harris:

On January 18, 2007, the National Marine Fisheries Service (NMFS) received your request for a written concurrence that the effects of the proposed selling of timber on land managed by the Willamette National Forest (WNF) and Mt. Hood National Forest (MHNF), and portions of land managed by the Bureau of Land Management's Salem and Eugene Districts (Salem BLM and Eugene BLM, respectively) under the Willamette Thinning Timber Sales Programmatic were not likely to adversely affect (NLAA) species listed or critical habitat designated under the Endangered Species Act (ESA). The request was accompanied by a biological assessment (BA) that supported the effects determination. The BA analyzed the proposed programmatic action using the Analytical Process for Developing Biological Assessments for Federal Actions Affecting Fish within the Northwest Forest Plan Area (AP).[1]

On January 30, 2007, NMFS received a revised BA. On March 5, 2007, NMFS received another revised BA dated March 4, 2007, that incorporated minor clarifying language. In early April 2007, NMFS asked for further clarification of the proposed action, and received via e-mail the final revised BA dated April 10, 2007. On April 12, 2007, NMFS issued a letter of concurrence for the proposed action.[2]

[1] US Department of Agriculture, Forest Service; US Department of Commerce, NMFS; US Department of Interior, BLM, US Department of Interior, FWS. 2004. Analytical Process (AP) for Developing Biological Assessments for Federal Action Affecting Fish Within the Northwest Forest Plan Area. November, 2004. 53 p.
[2] Refer to NMFS consultation numbers 2007/00170 (FS) and 2007/00171 (BLM).

Project Elements and Project Design Criteria

The sub-team followed direction from the Willamette Province Level 2 Team to set the scope of actions that would be covered by the programmatic consultation. During the past 5 years, the majority of timber sales that the BLM and FS in the Willamette Province have consulted on have involved thinning in young, primarily Douglas-fir stands. These consultations have been informal. The direction from the Level 2 Team was to develop a NLAA programmatic consultation that would, to the extent possible, cover thinning sales that would be designed and implemented similar to the NLAA thinning sales of the past 5 years. Projects must be consistent with the Standards and Guidelines found in the NW Forest Plan and the appropriate action agency Best Management Practices for the protection of water quality.

This programmatic consultation will be limited to only commercial or density management thinning sales. These sales would occur in any land use allocation where timber harvest is allowed, including, but not limited to, Matrix, Late-Successional Reserves, Riparian Reserves, and Adaptive Management Areas. Silvicultural treatments will occur in young conifer stands, typically 35-80 years of age, in previously managed stands. Previously managed stands includes those stands where there has been previous timber harvest, stands planted or seeded after a fire, stands that have been commercially or pre-commercially thinned, and stands that have previously been entered for tree removal, such as salvage. Young stands are often dominated by relatively uniform dense conifers with little structural and spatial diversity. This programmatic does not include regeneration harvest (with the exception of small patch cuts of one acre or less in thinning units) or fire salvage harvest.

In general, the project design criteria (PDC) are associated with the various project elements of a timber sale. The project elements include: tree falling, yarding, new road and landing construction, road renovation, reconstruction, and maintenance, rock quarry operation, road decommissioning and closure, timber transport, and fuels treatment.

Commercial timber sale activities are often affected by seasonal operating restrictions to account for resource concerns related to wildlife, soils, botany, sedimentation, clean water, or hydrologic function. However, timber sale activities can occur year round.

Treatment is allowed in Riparian Reserves, if the treatment can be demonstrated to benefit the riparian resource and project design criteria are met (including variances).

Project Design Criteria:

A. General Criteria

The following general criteria must be met in order for a project to be eligible for coverage under this programmatic consultation:

A1. Projects must be consistent with the Standards and Guidelines found in the NW Forest Plan and the appropriate action agency Best Management Practices for the protection of water quality.

A2. Timber harvest must only be planned in previously managed stands (e.g. previously harvested timber, stands planted after a fire, stands pre-commercially thinned). Stands that were planted after a fire or pre-commercially thinned are considered managed. This programmatic consultation does not cover regeneration harvest or fire salvage harvest.

A3. Stands to be harvested must be less than 80 years old.

A4. Timber harvest within riparian reserves must retain all legacy trees (trees left from previous harvest that are typically larger than the remaining trees in the stand), and be designed as "thin from below" to retain the dominant and/or co-dominant trees. Patch cuts (typically associated with a density management prescription), are allowed in riparian reserves, only if each resulting opening is one acre or less in size.

A5. Portions of these projects that occur within the NW Forest Plan Riparian Reserves must be implemented only if this work maintains or improves habitat for aquatic and riparian-dependent species.

A6. Streams within the project area must be protected with buffers as shown in Table 3. Within these buffers, tree felling or yarding is prohibited (with the exception of felling and yarding through skyline corridors, see specific PDC under Yarding). Stream buffers are measured from the edge of active channel (stream banks) on both sides of the stream. The minimum buffers must be expanded to include the following features, if applicable:

a. Slope break = the point of topographic change below which management will result in active erosion or introduction of material into the stream channel or floodplain area.

b. Floodprone area = area accessed by the stream during medium to large peak flow events, typically defined as 2 times the bankfull depth.

c. High water table area = wetlands, seasonally saturated soils, standing water, seeps, bogs, etc.

Table 3. Minimum Stream Protection Buffer Widths by Stream Type and Proximity to Listed Fish Habitat (LFH[21]).

Adjacent to LFH habitat	Within 1 mile of LFH	Greater than 1 mile upstream from LFH	
	Perennial and Intermittent Streams	Perennial Streams	Intermittent Streams
Maintain a minimum 100' wide buffer	Maintain a minimum 50' wide buffer	Maintain a minimum 50' wide buffer	Maintain a minimum 30' wide buffer

A7. Due to a risk of water contamination, fuel and other petroleum products must be stored, and refueling must occur at least 150 feet from any stream or other sensitive waterbodies.

A8. Unstable slopes (areas adjacent to streams with indicators of active erosion such as ravel on the surface or jack-strawed trees), or sensitive stream reaches (such as streams where the dominant channel substrate is sand), or channels with high residual impacts (i.e. bank

[21] LFH = Listed Fish Habitat, defined as any stream reach potentially occupied by a ESA protected fish species, any stream reach designated as Critical Habitat, or any stream reach designated as Essential Fish Habitat.

erosion, downcutting, heavy fine sediment load) must be protected with a buffer of at least 100 feet wide from the edge of the unstable or sensitive area.

A9. Limit ground disturbing activities, such as mechanized falling, ground-based yarding, road construction/reconstruction/renovation, road decommissioning and landing construction, to the dry season (generally between May 15 and October 15) when the soil is more resistant to compaction and soil moisture is low.

A10. Changes in peak or base stream flows due to the implementation of this action must be insignificant or discountable (i.e. not measurable), based on hydrologic analysis.

B. Tree Falling

Logging operations are carried out with a variety of different systems. Hand felling with chainsaws and ground-based mechanized feller bunchers or processors are common. Mechanized falling equipment is becoming more common on thinning projects due to the harvest of smaller diameter trees. Mechanized fellers are typically used for logging in gentle terrain, flats and shallow slopes, and are restricted to slope gradients of less than 35% to minimize soil disturbance. An additional restriction to minimize detrimental soil impacts is to limit the use of mechanized equipment to periods of when low soil moisture conditions occur.

A feller buncher is a mobile machine, either rubber tired or tracked, with an articulating extensible arm onto which a felling head is attached. The felling head consists of grappling devices and either a disc saw or chain saw. The operator moves the machine into position in front of a tree and maneuvers the felling head to the tree trunk. The grappling devices wrap around the tree and the saw severs the tree from the stump. The machine then takes the severed vertical tree and lowers it into a horizontal position onto a pile or bunch of trees on the ground, hence the term feller buncher.
A processor is a mobile machine with a maneuverable articulating arm onto which a processing head is attached. This machine often follows a feller buncher and picks up one tree at a time from the tree pile or bunch. The tree is pulled by rollers through a clamp which removes all branches; then a saw in the processing head cuts off the top of the tree. The machine then pulls the delimbed tree through the processing head, stops at the desired length and cuts off the log, and then repeats the process until the tree and other trees in the pile or bunch are processed into a pile of delimbed, cut-to-length logs. The processor then moves to another pile of felled trees and repeats the process, leaving behind small groups of processed logs.

A harvester is a machine that combines the features and abilities of the feller buncher and processor and that may or may not have a bunk to store and then forward the trees or cut logs to the landing.

The following Project Design Criteria apply to Tree Falling:

B1. Trees must not be felled within the primary shade zone[22] associated with any perennial stream (with the exception of trees within skyline yarding corridors; see below).

B2. Thinning within the secondary shade zone on perennial streams may occur; however, at least 50% canopy closure must remain in this treated zone.

B3. Overlaying the above thinning criteria are these additional criteria as shown in Table 4.

Table 4. Thinning restrictions for streams near and upstream from LFH.

Stands of trees adjacent to LFH habitat, or adjacent to tributary streams within one stream mile of LFH habitat	Stands of trees adjacent to stream reaches that are greater than one mile upstream from LFH
Maintain a conifer RD[23] value of at least 30 in the stand area located between the protection buffer (Table 3) and one site potential tree height from the stream.	Maintain a conifer RD value of at least 30 within 100' from the stream.

B4. Harvested trees that will be yarded must be felled away or parallel to the stream buffer. Trees that are inadvertently felled into the stream buffer, or trees felled to create yarding corridors within the stream buffer, must be left on site.

B5. Felling must not create openings greater than one acre in size.

B6. The distance separating a patch cut unit from LFH must be greater than the height of a site potential tree. The distance separating a patch cut unit from all other streams must be at least 100 feet.

C. Yarding

Yarding systems include cable systems with either one end or full suspension requirements, ground-based systems including rubber tire or track mounted skidders and forwarders, swing-yarders, and helicopter-based yarding. Ground-base yarding equipment is typically used for logging in gentle terrain, flats and shallow slopes. Cable systems and helicopters may be operated year-round. Ground-based yarding is often the most cost effective method for yarding the smaller logs associated with thinning projects. The cost of operating helicopters is typically too expensive given the lower yarding volumes associated with thinning.

Cable yarding is carried out by means of cable cranes based on a sledge winch yarder or a mobile tower yarder. The yarding machine may or may not have a boom or tower to achieve additional lift (suspension) of the logs as they are yarded to the landing. Cable systems are usually designed to yard logs uphill but downhill yarding may also occur. A typically cable yarding system uses a large cable, called a skyline, that runs from the yarder and is attached to a tailhold, usually a large tree. A carriage that rides on the skyline cable is attached to a mainline that can be released and retrieved by the yarder. The mainline, or a separate cable, is dropped from the carriage and attached to the log. As the carriage is retrieved back to the yarder the log is lifted off the ground. Full suspension occurs when the log is lifted entirely free of the ground, one-end

[22] The primary shade zone is defined in the Northwest Forest Plan Temperature TMDL Implementation Strategies, USDA Forest Service and Bureau of Land Management, 2005.

[23] Relative density (RD) is defined as the basal area divided by the square root of the quadratic mean diameter.

suspension refers to when the trailing end of the log is dragged on the ground. Multi-span type yarding systems utilize a system of intermediate supports, usually existing trees, to suspend the cable off the ground in order to improve suspension. These systems may be used in situations where skyline logging is not able to lift the logs free of the ground, typically on more gentle ground or when topographic features interfere with suspension.

A grapple skidder is a rubber tired four-wheel-drive machine with a forward dozer blade and a maneuverable grappling device at the back of the machine. These machines are generally used where feller buncher machines are working. The grapple skidder backs into position adjacent to previously felled piles (bunches) of trees. The operator opens and lowers the grapple onto the trunks of the trees and then closes the grapple and raises the tree trunks slightly off the ground.

A feller forwarder is a feller buncher with a bunk to the rear of the operator into which the felled trees are lowered and carried to the next tree to be felled. The process is repeated until the bunk is full. The machine then moves or forwards the trees to the landing and unloads them.

A forwarder is a tracked or rubber tired machine consisting of a dozer blade, articulating grapple, and a bunk to the rear. This machine usually follows the processor and picks up the cut-to-length logs, places them in the bunk and then takes the logs out of the woods and piles them at the landing. It then moves back into the woods to repeat the process.

A swing-yarder is a tracked machine with a rotating platform with an extended boom. A grappling device is attached to a cable that can be lowered and retracted from the boom. The operator opens and lowers the grapple onto the trunks of the trees and then closes the grapple and raises the tree trunks slightly off the ground. The operator then moves the log, in the air, around to a skid trail where the log is placed to be picked up by a skidder or forwarder.

Ground-based yarding systems usually require a system of skid trails that radiate out from the landing. Skidders or forwarders bring the logs from where they are felled back to the landing over this system of trails. Skid trails are will be designated and approved before trees are felled to provide the most efficient falling and yarding operation and to limit the overall amount of ground disturbed by the trails.

Helicopters are used for yarding trees to landings from steeper ground in situations when road and landing construction would result in unacceptable ground disturbance or excessive construction costs or when environment conditions require full suspension that cannot be achieved with conventional equipment. A grapple is lowered on a cable below the helicopter and attached to the log which is then lifted vertically into the air and flown to the landing.

The following Project Design Criteria apply to Yarding:

C1. Skyline or ground-based yarding must not occur within the buffers associated with LFH. Skyline yarding over streams with LFH is acceptable if the logs can be fully suspended above the existing stream buffer tree canopy.

C2. Require full suspension when yarding logs over non-LFH stream channels and within their protection buffers (Table 3). Require full or one-end suspension when yarding in

the remaining (outer) portion of the riparian reserve. Require full or one-end suspension with lateral skyline yarding, to the extent practicable.

C3. Limit the establishment of skyline yarding corridors over perennial streams to no more than five corridors per 1,000 lineal feet of stream. Individual corridor widths must not exceed 15 feet. Corridors will be spaced at least 100 feet apart (along the stream).

C4. The use of ground-based yarding and felling equipment is prohibited:

a) on slopes exceeding 35%, and

b) within the stream protection buffers (Table 3).

C5. Prohibit the use of existing landings if they are:

a) within 200 feet of LFH,

b) within 200 feet of a non-LFH stream, if the potentially affected stream reach is within 0.5 miles of LFH, or

c) within 100 feet of any stream channel.

C6. If an existing landing within 200 feet of a stream is used, erosion control measures must be installed prior to use to prevent soil movement downslope from the landing. The landing must be rehabilitated (compacted soils fractured, seeded) after use.

C7. Existing landings planned for use between Oct 16 and May 14, must be surfaced with aggregate material.

C8. Use existing landings and skid trails to maximum extent possible. The maximum extent of soil compaction (defined as management-caused crowding of soil particles which causes a decrease in soil porosity, and an increase in soil density) due to skid trails, corridors, mechanical piling and landings associated with activities in the proposed action must not be more than 10% of the harvest unit area (i.e., regardless of the extent of existing soil compaction, no more than 10% of the harvest area may be compacted as a result of activities associated with the proposed action).

C9. Skid trails must not be constructed through areas with a high water table, or be located in areas that will channel water onto unstable headwall areas.

C10. All primary skid roads (defined as more than 5 passes by a machine) used for ground-based operations will be designated on the ground to limit extent of soil compaction.

C11. Where practicable, ground-based machines will place logging slash on skid trails to create slash mats for machines to walk on. These mats act as a buffer for soils during logging.

D. New Road and Landing Construction

New road and landing construction is often required to gain access to timber sale units or provide improved conditions for yarding. Landings are used as yarding collection points and for log truck loading. New roads may be temporary (built and removed in the same season), semi-permanent (built and used over several season but removed at the end of the sale period), or permanent (left open for resource management access needs following both the initial harvest

activity and post-sale operations). These roads may have a natural surface or be rocked depending on the planned use of the road. Road and landing construction is implemented in the dry season during low soil moisture conditions.

Road construction may include vegetation removal, excavation, sub-grade reinforcement, aggregate surfacing, culvert installation at streams, bridge construction, drainage structure construction, and slash disposal. These activities require the use of a variety of heavy equipment such as graders, dozers, backhoes, trucks, and rollers.

The following Project Design Criteria apply to New Road and Landing Construction:

D1. Prohibit the construction of new roads or landings within 500 feet of LFH or within 200 feet of any other stream.

D2. Only allow new construction on or near stable ridgetop locations, or on stable, relatively flat topography. Do not allow sidecast road construction when the hill slope exceeds 30%.

D3. Require an aggregate or paved surface for all new roads or landings that will be used in the wet season (generally Oct 16 to May 14).

D4. New road construction must not increase the stream drainage network (i.e. new roads will be outsloped, or the outflow of new ditch relief culverts or other drainage structures will not drain to streams).

D5. New cross drains discharge to stable slopes where the outflow will quickly infiltrate the soil and not develop a channel to a stream.

D6. There must be no net increase in the length of the permanent road network. Permanent roads are those that will remain as a system road after the project has been completed. The effect of new permanent road construction must be offset by the obliteration or decommissioning of an equivalent or greater length of existing road during the period of project implementation.

D7. When constructing new roads, the width of the compacted surface and ditch line must not be wider than 24 feet, and must be full bench construction.

D8. Implement erosion control measures to prevent offsite movement of disturbed or exposed soil associated with new road and landing construction (including cutbanks, fills, ditches, etc.) on road segments that have the potential to directly or indirectly deliver sediment to any stream channel. Erosion control measures include silt fences, straw bales, matting, mulch, slash, water bars, grass seed [or other products], etc. This work will occur prior to the wet season.

E. Road Renovation, Reconstruction, and Maintenance

Timber sales generally use the existing transportation network for harvest access and haul routes. Some reconstruction and maintenance of existing roads typically occurs with thinning projects. Road renovation and reconstruction is implemented in the dry season during low soil moisture conditions. Road maintenance usually occurs during the dry season but may be required

throughout the year to prevent deterioration of the road surface and ditches and subsequent erosion or culvert failures.

Road maintenance – Road maintenance is necessary to keep roads in good condition, minimize erosion, and identify and correct problems promptly. Maintenance, including pre-haul, ongoing during haul operations, post-haul, and related erosion control structures/methods are a part of the harvest activity to ensure that roads are prepared, maintained during haul, and put into a suitable condition after operations are concluded. Scheduled road maintenance, unlike emergency maintenance necessary to protect the road and reduce erosion impacts, is maintenance work that has be identified and can the planned for ahead of time. Maintenance includes blading road surfaces, cleaning/reestablishing relief ditches, brushing road sides; installing and maintaining drainage structures, sign maintenance, spot rocking, dust abatement with water, chip sealing, asphalt patching, bridge maintenance, slough removal, crack sealing, culvert replacement, subgrade reinforcement, and snow removal.

Road Renovation – Work done to an existing road which restores it to its original design standard for the planned log haul. Renovation may include blading and shaping of roadway and ditches, widening of the subgrade, small slide/slump repairs, clearing brush from cut and fill slopes, cleaning, replacing or upgrading culverts, and applying rock surfacing material to depleted surfaces. May also include addition of cross-drain culverts where needed to improve drainage and reduce the distance that water travels in the ditch. This is also known as road maintenance on some units.

Road Reconstruction – Work done to restore a damaged or badly deteriorated road to a usable condition and possibly a new design standard. May include road realignment, slide and fill failure repair and/or structure upgrades. Reconstruction generally involves a higher degree of engineering than basic road renovation work.

The following Project Design Criteria apply to Road Renovation, Reconstruction, and Maintenance:

E1. Limit <u>scheduled</u> soil disturbing timber sale road maintenance activities to the dry season (generally between May 15 and October 15), unless the road segment has no hydrologic connection.

E2. Do not implement scheduled road renovation or reconstruction within 200 feet of LFH.

E3. For road renovation and reconstruction, the width of the compacted surface and ditch line must not be wider than 24 feet. Road work on existing roads that are wider than 24 feet must not result in an increase in the road width.

E4. ~~Road renovation or reconstruction activities that require an increase in the road width must be conducted on the cut bank side.~~ (Omitted in final review)

E5. Implement erosion control measures to prevent offsite movement of disturbed or exposed soil associated with road renovation and reconstruction (including cutbanks, fills, ditches, etc.) on road segments that have the potential to directly or indirectly deliver sediment to any stream channel. Erosion control measures include silt fences, straw bales, matting,

mulch, slash, water bars, grass seed [or other products], etc. This work will occur prior to the wet season.

E6. Existing vegetation in ditchlines that discharge to streams must not be removed unless an effective sediment trap is installed and maintained until vegetation is reestablished.

E7. Do not grade material removed from ditchlines onto the road surface where the road surfaces are hydrologically connected to a stream. Remove and store this material and all other waste materials in a stable site which is not hydrologically connected to any stream.

E8. The installation of cross drain culverts must result in a culvert which drains to a stable hill slope with porous soils, allowing for water infiltration, with a low probability of erosion, and subsequent new channel formation that connects to an existing stream.

E9. Woody material removed from stream channels during culvert maintenance must be retained in the stream network. Typically this would entail repositioning wood located upstream from a culvert to a location downstream of the culvert. This activity is prohibited in LFH.

E10. Close and waterbar native surfaced roads prior to the wet season (Oct 16 and May 14) and between operating seasons to prevent use and reduce erosion.

E11. Dust abatement is limited to the application of water only. Do not draft water from LFH. Use a screen on the drafting hose when drafting from other fishbearing streams.

E12. Pumping of water for use in road maintenance must allow for the retention of at least 90% of the original stream flow below the pumping site. Do not draft water from LFH. Use a screen on the drafting hose when drafting from other fishbearing streams.

E13. New aggregate surfacing must use durable rock (AASHTO T210), and have no more than 15% fines (#200 sieve).

E14. At the termination of the sale, native surfaced roads must have drainage structures (e.g., waterbars) installed, if the road is hydrologically connected to any stream, and the road closed to prevent use.

Culvert or Bridge Replacement PDCs

E15. Prohibit the replacement of culverts or bridges if the crossing is located:

a) on LFH,
b) on a perennial stream less than one mile upstream from LFH, or
c) on an intermittent stream less than 0.5 miles upstream from LFH.

E16. All new replacement culverts and bridges at stream crossings must be designed to pass at least a 100-year flood streamflow.

E17. Instream work must be completed during the ODFW instream work window.

E18. Continuous stream flow must be maintained downstream from the installation site. Replacements over streams with intermittent flow must only occur when the stream is not flowing.

E19. Require the complete excavation of overburden (road fill material) at each culvert replacement site prior to extracting the existing culvert.

E20. Replacement bridges must consist of a single span with the abutments located outside of bankfull width.

E21. Abutment work areas must be isolated from any flowing water.

E22. Heavy machinery is prohibited from entering the active channel area of the stream.

E23. Concrete will not be poured if any of the uncured concrete or contaminated wash water might enter a stream channel.

F. Rock Quarry Operation

Rock quarries are developed as source areas for rock and gravel used for surfacing forest roads. Quarries may be large enough to supply road surface materials for a network of roads or may be small and supply rock only for the roads associated with an individual timber sale. Activities associated with the development of a rock quarry include vegetation and soil removal, excavation, drilling and blasting and construction of access roads and work area. Activities associated with quarry use include drilling and blasting; crushing, sorting and piling of rock materials; and loading trucks. These activities require the use of a variety of heavy equipment such as excavators, dozers, backhoes, rock crushers and trucks. Quarry sites that are no longer needed to supply rock for roads, or which contain a low quality of rock which does not meet present road surfacing standards are often used as waste areas for material removed from roads and ditches during road maintenance operations.

The following Project Design Criteria apply to Rock Quarry Operation:

F1. Quarry operations (including interrelated activities) will not cause sediment and contaminant delivery mechanisms to any stream channel.

F2. Quarries located in riparian reserves will only be operated during the dry season (generally May 15 to Oct 15).

F3. For quarries located within one mile of LFH, do not allow any disturbance within 200 feet of any stream channel.

G. Road Decommissioning and Closure

As a general rule, temporary roads are closed and/or obliterated as part of the harvest activity depending on post-sale access needs. On occasion, closed roads may be opened to facilitate harvest access and, again, depending on post-sale activity, may be closed as part of the harvest operations. Existing roads that are no longer needed to meet resource objectives may be decommissioned to reduce maintenance costs, access and soil disturbance.

Road Decommissioning – Includes removal of culverts, re-establishment of natural drainage patterns, and blocking vehicle access. Subsoiling or bucket-ripping and seeding of roadbed may accompany this activity.

Road Closures (administrative use only) – Work done to a road to put it in a condition so it will limited motor vehicle access and will receive only a low level of maintenance. This activity may leave culverts in place, adding water bars and limiting vehicle access. This is done to preserve the road for future forest management uses while reducing the need for maintenance activities.

The following Project Design Criteria apply to Road Decommissioning and Closure:

G1. Do not decommission roads that are within 500 feet of LFH.

G2. Remove all culverts, stream crossings, and cross-drains from roads that will be decommissioned (i.e. taken of the road network and will not be used again).

G3. Reduce the fill material over culverts left in place on roads scheduled for closure.

G4. Decommissioned roads must be effectively closed to all vehicle traffic.

G5. Closed roads must have waterbars or other water drainage features installed.

G6. Culverts to be removed on perennial streams must be at least one mile upstream from LFH and removals on intermittent streams must be at least 0.5 miles upstream from LFH.

G7. Instream work must be completed during the ODFW instream work window.

G8. On perennial streams, continuous stream flow must be maintained around the culvert removal site.

G9. Excavations to remove stream culverts will be matched to the approximate bed elevation and bank-full stream width of the existing streambed. Cuts must match natural bank slopes.

G10. At culvert removal sites, the road must have waterbars or other drainage features constructed to route surface water away from the newly excavated slopes.

G11. De-compact the decommissioned road bed on natural and aggregate surfaced roads, and use seed or other materials to establish effective ground cover prior to the wet season.

H. Timber Transport

Timber transport, or haul, involves the transportation of logs, with large trucks, from a landing to the sawmill. This typically involves an extensive network of roads with various types of surfacing and may occur year-round or be seasonally restricted depending on yarding requirements, road conditions, resource protection needs, and climate.

The following Project Design Criteria apply to Timber Transport:

There are no restrictions on the transport of timber over paved roads.

H1. Avoid haul routes that require travel over unstable road segments, if road use or failure would result in sediment delivery to any stream.

H2. Timber transport operations will be stopped immediately if road use is causing rutting of the road surface, ponding of water on the road, failure of any drainage structure, or any other action occurs which increases the sediment delivery to a stream. Actively implement restorative work to reduce or eliminate the erosion. The road surface must be repaired before haul can resume.

H3. Timber transport on aggregate surfaced and natural surfaced roads is allowed during the dry season (generally May 15 to Oct. 15) if the following criteria are met:

a) The approach and crossing of each LFH stream is paved or has a high quality, well drained, and recently maintained aggregate surface.

b) Approaches and crossings for all other streams: the ditch lines draining to these streams are densely vegetated or have other effective sediment retaining structures in place.

c) The fill slopes on all haul route stream crossings will be vegetated or otherwise stabilized such that road surface sediments are retained prior to entering the stream channel.

d) Adequate cross drainage has been installed so that there is less than 200 feet of road draining to any stream/road crossing.

Additional Wet Season Haul PDCs:

H4. Bridges on the haul routes do not discharge runoff directly to stream (i.e., no scuppers).

H5. Timber transport is not allowed on native surfaced roads during the wet season (Oct 16 to May 14).

H6. Timber transport is allowed during the wet season (Oct 16 to May 14) on aggregate surfaced roads if the following criteria are met:

a) Aggregate surfaced haul routes must not cross LFH, or cross other streams that are within 1,000 feet from LFH. The haul route must not be closer than 500 feet of LFH at any given point.

b) Haul routes must be inspected weekly, or more frequently if weather conditions warrant. Inspections will focus on road surface condition, drainage maintenance, and sources of soil erosion and sediment delivery to streams.

c) Do not allow timber haul during periods of daily alternating freezing and thawing periods over a several day period. Haul is allowed on completely frozen or snow covered roads.

d) Hauling is not allowed when conditions exist (e.g. during intense or prolonged rainfall), that may cause generation of road related runoff to streams.

e) Spot rocking and/or sediment traps will be employed to reduce potential sediment inputs to streams. Sediment traps will be inspected weekly during the wet season and entrained soil would be removed when the traps have filled to ¾ capacity. Dispose of these materials in a stable site which is not hydrologically connected to any stream.

I. Fuels Treatment

Fuels treatment may involve pile burning at landings and within units. Thinning in young stands typically does not result in large quantities of slash. Trees in cable yarded units are often yarded to the landing with the limbs attached. The limbs are removed at the landing, piled and burned during the wetter periods of the year. Ground-based yarding equipment often "walks" on slash, effectively crushing it to the ground reducing the need for fuels treatments. Slash is often scattered back onto skid trails to prevent further vehicle use and to minimize erosion. In areas where slash accumulations are large enough to present a fuels concern the slash is piled and burned.

Fuels treatments may be necessary within sale areas to remove residual slash to reduce fire hazard and improve planting and growing conditions after harvest. Various types of fuel treatment methods are used, (i.e. hand-piling, tractor piling, lop and scatter). Hand-piling involves the manual placement of smaller pieces of slash into piles for future burning under conditions, typically during winter or spring, which will prevent the unintended spread of fire. Swamper burning is similar to hand piling except that the slash is manually added as the pile burns. Mechanical or tractor piling is used when the amount or size of slash is too great for manual piling. Mechanical piling is done during periods of low soil moisture to reduce impacts to soils caused by using heavy equipment and the burning takes place during winter or spring. Lop and scatter is done when fuel loading is very light; a chainsaw is used to cut longer pieces of slash so that it can be spread around and lay closer to the ground.

There is some preparation of harvest units for post-harvest burning, which may include fireline construction (hand/tractor).

The following Project Design Criteria apply to Fuels Treatments:

I1. Fuels treatment of any kind is prohibited within the stream protection buffers (Table [*3*]).

I2. Lop and scatter fuels treatment is allowed outside of the protection buffers.

I3. Hand piling of fuels intended for burning is prohibited closer than 100 feet from any stream channel.

I4. Mechanical fuels treatment, or the construction of mechanical fire control line is prohibited closer than 500 feet of LFH or closer than 200 feet from any other stream channel.

I5. Prohibit the construction of hand-built fire lines where water could be channeled into areas of instability, headwalls or streams. Construct waterbars on fire line to reduce soil erosion.

Implementation Process under the Proposed Programmatic Consultation

The proposed tiered consultation strategy includes the development of a biological assessment (BA) that evaluates the effects of thinning timber sales and their associated activities on listed species of salmon, steelhead and bull trout and their designated critical habitat in the region. The

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to NMFS Nos.:
FS: 2008/03505
BLM: 2008/03506
BIA: 2008/03507

June 27, 2008

Calvin Joyner
Acting Regional Forester, Region 6
USDA Forest Service
P.O. Box 3623
Portland, Oregon 97208

Edward W. Shepard
Director, Oregon/Washington
USDI Bureau of Land Management
P.O. Box 2965
Portland, Oregon 97208

Stanley Speaks
Regional Director, Northwest Region
Bureau of Indian Affairs
911 NE 11th Ave.
Portland, Oregon 97232

Re: Reinitiation of the Endangered Species Act Section 7 Formal Programmatic Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Fish Habitat Restoration Activities in Oregon and Washington, CY2007-CY2012.

Dear Mr. Joyner, Mr. Shepard, and Mr. Speaks:

On April 27, 2007, NOAA's National Marine Fisheries Service (NMFS) issued a biological and conference opinion (Opinion) on the effects of the Forest Service, Bureau of Land Management (BLM), and Bureau of Indian Affairs (BIA) (acting for the Coquille Tribe) implementing fish habitat restoration activities in Oregon and Washington. In that Opinion, NMFS concluded that the programmatic action, as proposed, was not likely to jeopardize the continued existence of 18 species of salmon and steelhead listed under the ESA or result in the destruction or adverse modification of designated critical habitat for these species. On September 27, 2007, NMFS confirmed the conference opinion on Puget Sound steelhead as a biological opinion.

On February 11, 2008, NMFS issued a final determination to list the Oregon Coast (OC) coho salmon as threatened, designate critical habitat for this species and issue protective regulations (73 FR 7816). The listing, critical habitat designation, and protective regulations became effective on May 12, 2008. On March 3, 2008, you requested that NMFS reinitiate consultation and issue a new programmatic Opinion on fish habitat restoration activities in Oregon and Washington to include OC coho and their critical habitat. Your request included a supplemental biological assessment analyzing the effects of the proposed restoration actions on OC coho and their habitat. Please find the requested Opinion attached.

The NMFS listed the southern distinct population segment (DPS) of green sturgeon as threatened under the ESA on April 7, 2006 (71 FR 17757). New information indicates that Southern DPS green sturgeon use estuarine and lower river portions of the action area as habitat for growth and development to adulthood and for adult feeding. The NMFS has not designated critical habitat for southern DPS green sturgeon, or issued protective regulations under section 4(d) of the ESA. Although your submitted biological assessment did not include a determination of effect for southern DPS green sturgeon, NMFS has enough information to determine that the proposed fish habitat restoration activities are not likely to adversely affect this species.

This document also includes the results of our analysis of the action's likely effects on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), and includes one conservation recommendation to avoid, minimize, or otherwise offset potential adverse effects on EFH. Section 305(b)(4)(B) of the MSA requires Federal agencies to provide a detailed written response to NMFS within 30 days after receiving these recommendations.

If the response is inconsistent with the EFH conservation recommendation, the Forest Service, BLM, or BIA must explain why the recommendations will not be followed, including the scientific justification for any disagreements over the effects of the action and the recommendations. In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, NMFS established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, in your statutory reply to the EFH portion of this consultation, we ask that you clearly identify the number of conservation recommendations accepted.

If you have questions regarding this consultation, please contact Spencer Hovekamp, Branch Chief of the Eastern Oregon Habitat Branch of the Oregon State Habitat Office, at 541.975.1835, ext. 224.

Sincerely,

for D. Robert Lohn
Regional Administrator

cc: Rollie White, USFWS
Scott Peets, FS
Al Doelker, BLM
Jason Robinson, Coquille Tribe

Endangered Species Act – Section 7 Programmatic Consultation
Biological Opinion

and

Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat Consultation

Fish Habitat Restoration Activities in Oregon and Washington, CY2007-CY2012

Lead Action Agencies:	USDA Forest Service USDI Bureau of Land Management USDI Bureau of Indian Affairs
Consultation Conducted By:	National Marine Fisheries Service Northwest Region
Date Issued:	June 27, 2008
Issued by:	for D. Robert Lohn Regional Administrator
NMFS Nos.:	**FS: 2008/03505** **BLM: 2008/03506** **BIA: 2008/03507**

TABLE OF CONTENTS

INTRODUCTION

This document contains a programmatic biological opinion (Opinion) and incidental take statement issued to the Forest Service, Bureau of Land Management (BLM), and Bureau of Indian Affairs (BIA) for Fish Habitat Restoration Activities in Oregon and Washington, CY2007-CY2012. This document was prepared in accordance with section 7(b) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531, *et seq*.), and implementing regulations at 50 CFR 402. The National Marine Fisheries Service (NMFS) also completed an essential fish habitat (EFH) consultation, prepared in accordance with section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1801, *et seq*.) and implementing regulations at 50 CFR 600.

The docket for this consultation is on file at the Oregon State Habitat Office, in Portland, Oregon.

Background and Consultation History

On April 27, 2007, NOAA's National Marine Fisheries Service (NMFS) issued an Opinion and EFH consultation on the effects of the Forest Service, BLM, and BIA (acting for the Coquille Tribe) (collectively referred to as the Action Agencies hereafter) implementing fish habitat restoration activities in Oregon and Washington. In this Opinion, NMFS concluded that the programmatic action, as proposed, was not likely to jeopardize the continued existence of 16 species of salmon and steelhead listed under the ESA or result in the destruction or adverse modification of designated critical habitat for these species. The Opinion was based on information provided in the Action Agencies' biological assessment (BA) and developed during formal consultation. On September 27, 2007, NMFS confirmed the conference opinion on Puget Sound steelhead (*Oncorhynchus mykiss*) as a biological opinion.

On February 11, 2008, NMFS issued a final determination to list the Oregon Coast (OC) coho salmon (*O. kisutch*) as threatened, designate critical habitat for this species and issue protective regulations (73 FR 7816). The listing, critical habitat designation, and protective regulations became effective on May 12, 2008. On March 3, 2008, the action agencies requested that NMFS reinitiate our programmatic Opinion on fish habitat restoration activities in Oregon and Washington to include OC coho salmon and their critical habitat. Formal consultation was reinitiated on this date. The Action Agencies' request included a supplemental biological assessment analyzing the effects of the proposed restoration actions on OC coho salmon and their habitat. This Opinion, which includes OC coho salmon and their critical habitat, will supplant the previous Opinion and incidental take statement. This Opinion will serve as our determination that the proposed fish habitat restoration activities are not likely to adversely affect southern distinct population segment (DPS) of green sturgeon (*Acipenser medirostris*). Information about this species and the expected effects of the proposed action is included in the status of the species, environmental baseline, and effects of the action sections of this Opinion.

Proposed Action

For purposes of this consultation, the proposed action is to implement 19 categories of restoration actions on FS and BLM lands in Oregon and Washington and the Coquille Indian Reservation in Oregon. The Action Agencies propose to begin implementing projects under this consultation in calendar year (CY) 2007 and stop implementing new projects under this consultation after CY2012.

Geographic Scope

This programmatic consultation covers those portions of Forest Service (FS) and BLM administrative units found in Oregon and Washington and the Coquille Reservation located in Western Oregon. It also covers portions of FS and BLM administrative units that are primarily located in Oregon and Washington, but overlap into California (Rogue/Siskiyou National Forest), Nevada (Lakeview and Vale BLM District) and Idaho (Wallowa-Whitman National Forest). Table 1 lists the National Forests and BLM Districts covered by this programmatic consultation.

Table 1. National Forests and BLM Districts, with state location, covered by this consultation.

Land Management Unit	State
National Forests	
Deschutes	OR
Fremont/Winema	OR
Malheur	OR
Mt. Hood	OR
Ochoco	OR
Rogue River/Siskiyou	OR/CA
Siuslaw	OR
Umpqua	OR
Wallowa/Whitman	OR/ID
Willamette	OR
Colville	WA
Gifford Pinchot	WA
Mt. Baker/Snoqualmie	WA
Okanogan/Wenatchee	WA
Olympic	WA
Columbia River Gorge Scenic Area	OR/WA
Umatilla	OR/WA
BLM Districts	
Burns	OR
Coos Bay	OR
Eugene	OR
Lakeview	OR/NV
Medford	OR
Prineville	OR
Roseburg	OR
Salem	OR
Vale	OR/NV
Spokane	WA

This consultation also covers actions that occur on non-Federal lands when that action is located immediately adjacent to a FS or BLM unit and the project helps achieve FS and/or BLM aquatic restoration goals as covered under Wyden Amendment authority (16 U.S.C. 1011(a), as amended by Section 136 of PL 105-277). To be included, such non-Federal land projects must follow all elements of the proposed action described in this Opinion. The Action Agencies will ensure that actions covered under this programmatic on non-Federal land undergo the same process and compliance as projects occurring on action agency land. The Action Agencies shall retain discretion over the private land action in order to ameliorate any unexpected adverse effects during and after project implementation.

Implementation Process

The Action Agencies propose the four step implementation process described below to carry out and monitor projects under this programmatic Opinion. This process takes advantage of the interagency Level 1 Teams[1] described in *Streamlining Consultation Procedures Under Section 7 of the Endangered Species Act* (USDA Forest Service, NMFS, Bureau of Land Management, and U.S. Fish and Wildlife Service 1999).

1. **Integration of Project Design Criteria (PDC), Conservation Measures, and Terms and Conditions into Project Design and Contract Language**. The Action Agency project lead will integrate species and activity category-appropriate design criteria and conservation measures into the proposed restoration action. The Action Agencies propose appropriate design criteria and conservation measures in the BA and they will be incorporated into contract language or force-account work plans.

2. **Project Notification and Reporting.** The Level 1 Team for areas where projects are implemented will meet at least annually to discuss implementation of this programmatic consultation. Level 1 Teams will discuss both advance project notification and completed projects. The date of the meeting will be determined by the individual Level I Teams. This notification and reporting process may be adapted to adhere to the local Level 1 Team meeting schedules, operating protocols, and forms. Because the proposed activities have already proceeded through formal consultation, additional approval from NMFS Level 1 Team members is not necessary. However, the action agencies recognize that NMFS Level 1 Team members can offer additional site specific information that may aid project planners.
    a. **Project Notification Meeting**. Level 1 Teams will discuss aquatic restoration projects planned for implementation during the upcoming work season. NMFS biologists may provide additional information that will assist in project design (*e.g.* early spawning timing anticipated due to an ongoing drought). A Project Notification Form shall be provided to the Level 1 Team members prior to the meeting and should include the following information:

[1] Level 1 Teams consist of at least one biologist from the each of the following agencies: Forest Service, BLM, US Fish and Wildlife Service, and NMFS. These teams cooperatively conduct ESA section 7 consultations in a defined geography, usually a National Forest and adjacent BLM District.

i. Location – 6th field HUC[2]- 12 digit code and name.
ii. Timing – Project start and dates.
iii. Activity Type – Identify all proposed activity types that apply.
iv. Project Description – Brief narrative of the project and objectives.
v. Extent – Number of stream miles or acres to be treated.
vi. Species Affected – Listed fish and or wildlife species, critical habitat, and or EFH affected by the project.

b. **Completed Projects**. The Action Agencies will report to the Level I Team on all high impact and low impact projects implemented the previous year. This includes Wyden Amendment projects. The reports will include the following information necessary for NMFS tracking needs:
i. Location – 6th field HUC and name.
ii. Timing – Project start and end dates.
iii. Activity Type – All that apply from Table 6 of the BA.
iv. Project Description – Brief narrative of the project and objectives.
v. Extent – Number of stream miles or acres treated.
vi. Species affected – fish and or wildlife species affected by the project, critical habitat and/or EFH.
vii. Fish Handling – If fish are handled during rescue operations the project biologist will describe removal methods, stream conditions, and the number of fish affected. This report will likely be limited to culvert replacement projects.
viii. Any authorized incidental take.
ix. Agency Name – Agency and project lead name.
x. Date of submittal.

3. **Monitoring Requirements.** Monitoring will be conducted during project implementation and after project completion.
a. **Monitoring during Project Implementation and Follow-up Remedial Activities if Necessary**
i. Monitor during project implementation to ensure effects are not greater (amount, extent) than anticipated and contact Level 1 representatives if problems arise.
ii. Fix any problems that arise during project implementation.
iii. Regular biologist coordination with contract officer if biologist is not always on site to ensure contractor is following all stipulations.

b. **Post-project assessment.** A post-project review shall be conducted after winter high flows and rains. This can consist of a simple walk-through assessment to answer the following questions:
i. Are there post-project effects that were not considered during consultation?
ii. Is there head-cutting, degradation of embedded substrate, or a scour pool at the outlet of culverts that may indicate that project goals have not been met?

[2] Hydrologic Unit Code (HUC), information for specific HUCs can be found at: http://nppc.bpa.gov/

iii. In cases where remedial action is required, such actions are permitted without additional consultation if they use design criteria and conservation measures and the effects of programmatic actions covered are not exceeded.

4. **Level 1 Team Field Review**. At its discretion, the Level 1 Team shall conduct field reviews to determine whether a project meets the requirements of this programmatic consultation.

Description of the Proposed Activity Categories

The Action Agencies propose restoration activities designed to maintain, enhance and restore watershed functions that affect aquatic species. This consultation addressed those aquatic restoration activities that are commonly implemented on Action Agency lands that are predictable as to their effects to ESA-listed species and EFH and are consistent with broad scale aquatic conservation strategies. This Opinion addresses the following 19 aquatic restoration program activity types:

1. Large Wood, Boulder, and Gravel Placement
2. Reconnection of Existing Side Channels and Alcoves
3. Head-cut Stabilization and Associated Fish Passage
4. Bank Restoration
5. Fish Passage Culvert and Bridge Projects
6. Irrigation Screen Installation and Replacement
7. In-channel Nutrient Enhancement
8. Floodplain Overburden Removal
9. Reduction of Recreation Impacts
10. Estuary Restoration
11. Riparian Vegetation Treatment (non-commercial, mechanical)
12. Riparian and Upland Juniper Treatment (non-commercial)
13. Riparian Vegetation Treatment (controlled burning)
14. Riparian Area Invasive Plant Treatment
15. Riparian Exclusion Fencing (with water gaps and stream crossings)
16. Riparian Vegetation Plantings
17. Road Treatments
18. Removal of Legacy Structures
19. Fisheries, Hydrology, Geomorphology Wildlife, Botany, and Cultural Surveys in Support of Aquatic Restoration

To aid in the analysis of effects for this consultation, the Action Agencies divided the proposed activity types into Group 1 and Group 2. The Group 1 projects are proposed to occur within the bankfull stream channel and will result in one of the following: Project related turbidity and mobilization of fine sediment; possible herbicides for certain invasive plant treatments; in the stream during the low flow period; short-term riparian disturbance; or harassment of ESA-listed fish. The Group 2 projects are proposed outside of the bankfull channel and will result in small amounts of turbidity and mobilized fine sediment (and herbicides for certain invasive plant

treatments) in the stream during the low flow period; minor, short-term disturbance of riparian areas; or harassment of ESA-listed fish. Although the Group 2 projects do not involve in-channel construction, these actions will still result in some adverse effects to listed species or EFH.

To limit short-term adverse effects occurring in any one area, the action agencies propose that no more than 10 Group 1 aquatic restoration projects will be implemented under this programmatic consultation within a single 5th field watershed each year. This threshold was selected to ensure that short-term adverse effects associated with beneficial actions would not collectively compromise watershed function or integrity. The ten Group 1 projects that can be conducted within a 5th field watershed may consist of the same activity type or a mixture of the Group 1 activity types. The Action Agencies propose no limit on the number and extent of the Group 2 projects that can be conducted within a 5th field watershed. Tables 2 and 3 list the Group 1 and Group 2 activity types and the metrics used to identify the extent of one project.

Table 2. Group 1 Aquatic Restoration Activity Categories and Metrics Used to Identify the Extent of One Project.

Activity Type	**Metrics Used to Identify the Extent of One Project**
Large Wood, Boulder, and Gravel Placement	One project is equal to: 15 stream miles of helicopter placement or 5 miles using cable yarding equipment or 1 stream mile of placement with excavator-type equipment.
Reconnection of Existing Side Channels and Alcoves	One project is equal to 1 side channel/alcove project
Head-cut Stabilization and Associated Fish Passage	One project is equal to 1 head-cut project and associated fish passage structures.
Bank Restoration	One project is equal to stabilization of eroding banks along less than 0.5 mile of stream.
Fish Passage Culvert and Bridge Projects	One project is equal to removal or replacement of 1 road crossing structure.
Irrigation Screen Installation and Replacement (Weir Removal)	One project is equal to removal of 1 in-channel weir structure.
Road Decommissioning	One project is equal to 1 mile of road decommissioning where the road-bed is altered with heavy equipment and the road bed encroaches into the bankfull channel.
Floodplain Overburden Removal	One project is equal to overburden removal along 1 mile of stream. Includes floodplains on both sides of stream.
Riparian Area Invasive Plant Treatment (includes area within bankfull width channel only)	Within each sixth field HUC containing listed aquatic species, no more than 10% of the total riparian area, measured as adjacent stream length, will be treated within any one year period.
Removal of Legacy Structures	One project is equal to 1 stream mile of legacy structure removal.

Table 3. Low Impact Aquatic Restoration Activity Categories and Metrics Used to Identify the Extent of One Project.

Activity Type	Metrics Used to Identify the Extent of One Project
Irrigation Screen Installation and Replacement	No limit on number of screens
In-Channel Nutrient Placement	No limit on number of miles treated
Estuary Restoration	No limit on number of acres treated
Riparian Vegetation Treatment (non-commercial, mechanical)	No limit on number of acres treated
Riparian and Upland Juniper Treatment (non-commercial)	No limit on number of acres treated
Riparian Vegetation Treatment (controlled burning)	No limit on number of acres treated
Riparian Area Invasive Plant Treatment (outside of bankfull channel)	Within each 6th field HUC containing listed aquatic species, no more than 10% of the total riparian area will be treated within any one year period.
Riparian Exclusion Fencing	No limit on riparian acres or stream miles
Road Treatments	No limit on road miles treated for roads outside of bankfull channel.
Reduction of Recreation Impacts	No limit on acres or miles treated.
Survey and Monitoring	No limit on acres or miles surveyed

Consistent application of the following project descriptions, design criteria, and conservation measures for each category of restoration action is essential to programmatic consultation. Doing so ensures that the analysis conducted during consultation is based on the actual manner in which the programmatic activities will be carried out for the duration of the program, thereby ensuring that NMFS's effects analysis is accurate, that the amount or extent of take anticipated is reliable, and that determinations regarding jeopardy and adverse modification are properly framed and valid.

1. Large Wood, Boulder, and Gravel Placement and Tree Removal for Large Wood Projects

Description

Under this category, the Action Agencies propose to place large wood (LW) and boulders in stream channels and adjacent floodplains to increase channel stability, rearing habitat, pool formation, spawning gravel deposition, channel complexity, hiding cover, low velocity areas, and floodplain function. In areas where natural gravel supplies are low (immediately below reservoirs, for instance), gravel placement may be used to improve spawning habitat. Full channel-spanning porous boulder weirs (boulder weirs) will only be installed in streams with a legacy of splash damming, stream cleaning, or other activities that have resulted in highly uniform, incised, bedrock-dominated channels with few boulders or woody debris. Live and dead trees may be removed from riparian areas to provide LW for restoration projects, under special conditions described below. LW, boulder, boulder weirs and gravel projects will involve the use of log trucks and dump trucks for transport and excavator-type machinery, spyders, cable yarders, draft horses, or helicopters for placement.

5. Fish Passage Culvert and Bridge Projects

Description

The Action Agencies propose to remove or replace existing road-stream crossing structures (culverts and bridges) that restrict fish passage and natural flows with stream simulation structures to restore up- and downstream fish passage for all life stages of native fish. Replacements of existing road-stream crossing structures that do not restrict fish passage are permissible. Construction would involve use of heavy equipment, such as excavators, cranes, backhoes, front-end loaders, dump trucks, bull dozers, and on occasion pile-drivers and helicopters.

Design Criteria

1. Fish passage projects will be designed by an experienced engineer with design input from an experienced fish biologist and hydrologist. Such personnel shall oversee or review the project during construction to ensure that project designs and conservation measures are being properly implemented.
2. Forest Service Design Assistance Teams or the BLM and Coquille Tribe equivalent will provide design review for projects that exceed $100,000 or will result in structures that are greater than 20 feet wide.
3. Assess sites for a potential to head-cut below the natural stream gradient. Projects that lead to head-cutting below the natural stream gradient are excluded from this consultation.
4. Design Standards
    a. Structure Type – Structure types include closed-bottomed culverts, open-bottomed arch culverts, and bridges. Structure material must be concrete or metal.
    b. Structure Width – The structure width shall never be less than the bankfull channel width. (The stream width inside the culvert or between bridge footings shall be equal to or greater than the bankfull width.) The minimum structure width and height for a closed bottom culvert shall be 6 feet to allow manual placement of stream simulation material. Structures must accommodate a 100-year flood flow while maintaining sediment continuity (similar particle size distribution) within the culvert as compared to the upstream and downstream reaches. To meet this requirement, unconfined channel types (Rosgen C, E, and B channel types (Rosgen 1996)) may require structures wider than bankfull and/or the addition of flood relief culverts or other comparable flood relief methods.
    c. When possible, flood relief culverts will be designed to restore and maintain access to off-channel rearing and high flow areas for juvenile and adult fish. Therefore, existing floodplain channels should be the first priority for location of flood relief culverts which should be installed in a manner that matches floodplain gradient and does not lead to scour at the outlet.
    d. Channel Slope – The structure slope shall approximate the average channel gradient of the natural stream up- and downstream of the structure. The maximum slope for closed-bottomed culverts shall not exceed 6% because of difficulties in retaining substrate in the culvert at higher gradients. Open-bottom arches can be placed in channel gradients that exceed 6%.
    e. Embedded Culvert – If a closed culvert is used, the bottom of the culvert shall be buried into the streambed not less than 20% and not more than 50% of the culvert height. For open-bottomed arches and bridges, the footings or foundation shall be

designed to be stable at the largest anticipated scour depth. Substrate and habitat patterns within the culvert should mimic stream patterns that naturally occur above and below the culvert. Coarser material may be incorporated to create velocity breaks during high flows, thereby improving fish passage, and to provide substrate stability.

f. Riprap – The use of riprap is permissible above bankfull height to protect the inlet or outlet of new culverts or open-bottomed arches. If the use of riprap is required for culvert stability, then an additional analysis may be required to ensure that the structure is not undersized. Riprap may only be placed below bankfull height when necessary for protection of abutments and pilings for bridges. However, the amount and placement of riprap around the abutments and/or pilings should not constrict the bankfull flow.
g. Grade Control Structures – Grade control structures are permitted to prevent head-cutting above or below the culvert or bridge. Grade control typically consists of boulder structures that are keyed into the banks, span the channel, and are buried in the substrate.
h. Where applicable, incorporate road dips into crossing designs, to ensure catastrophic flood events will transport overflow back into the downstream channel instead of the road bed.
i. Structures containing concrete must be sufficiently cured or dried before they come into contact with stream flow.
j. In cases of structure removal or when removing an existing structure and replacing it with a bridge, consideration should be given to restoring the stream channel and reconnecting the floodplain at the site.
k. When removing woody debris from the road-crossing inlet, place the debris downstream of the road crossing.
l. Monitor structures after high flow events, which occur during the first fall/winter/spring after project completion. Assess the following parameters: head-cutting below natural stream gradient, substrate embeddedness in the culvert, scour at the culvert outlet, and erosion from sites associated with project construction. Apply remedial actions (using project design criteria and conservation measures) if projects do not meet the intended goals.
m. If other aquatic restoration activities are used as complementary actions, follow the associated design criteria and conservation measures.

Conservation Measures

Along with the general conservation measures summarized at the end of this section, the following conservation measures will be used to minimize sediment and turbidity and the effects of fish handling/transport:

1. Isolate construction area and remove fish from project area. Fish shall be removed from project area (see fish capture guidelines below).
2. Dewater Construction Site – Upstream of the isolated construction area, coffer dams (diversions) constructed with non-erosive materials are typically used to divert stream flow with pumps or a by-pass culvert. Diversions constructed with material mined from the streambed or floodplain are not permitted. Pumps must have fish screens and be operated in accordance with NMFS fish screen criteria. Dissipate flow energy at the bypass outflow to

prevent damage to riparian vegetation or stream channel. If diversion allows for downstream fish passage, (*i.e*., is not screened), place diversion outlet in a location to promote safe reentry of fish into the stream channel, preferably into pool habitat with cover. When necessary, pump seepage water from the dewatered work area to a temporary storage and treatment site or into upland areas and allow water to filter through vegetation prior to reentering the stream channel.

3. Stream Re-Watering – Upon project completion, slowly re-water the construction site to prevent loss of surface water downstream as the construction site streambed absorbs water and to prevent a sudden increase in stream turbidity. Monitor downstream during re-watering to prevent stranding of aquatic organisms below the construction site
4. Fish Handling – If capture, removal, and relocation of fish are required, follow these steps:
    a. All fish capture, removal, and handling activities shall be conducted by an experienced fisheries biologist or technician.
    b. Isolate capture area – Install block nets at upstream and downstream locations and leave in a secured position to preclude fish from entering the project area. Leave nets secured to the stream channel bed and banks until fish capture and transport activities are complete. If block nets or traps remain in place more than one day, monitor the nets and or traps at least on a daily basis to ensure they are secured to the banks and free of organic accumulation and to minimize fish predation in the trap.
    c. Fish Capture Options
        i. Collect fish by hand or dip nets, as the area is slowly dewatered.
        ii. Seining – Use seine with mesh of such a size to ensure capture of the residing ESA-listed fish.
        iii. Minnow traps – Traps will be left in place overnight and in conjunction with seining
        iv. Electrofishing – Prior to dewatering, use electrofishing only where other means of fish capture may not be feasible or effective. The protocol for electrofishing includes the following:
            1. If fish are observed spawning during the in-water work period, electrofishing shall not be conducted in the vicinity of spawning adult fish or active redds.
            2. Only Direct Current (DC) or Pulsed Direct Current (PDC) shall be used.
            3. Conductivity <100 use voltage ranges from 900 to 1100. Conductivity from 100 to 300 then use voltage ranges from 500 to 800. Conductivity greater than 300 then use voltage to 400.
            4. Begin electrofishing with minimum pulse width and recommended voltage and then gradually increase to the point where fish are immobilized and captured. Turn off current once fish are immobilized.
            5. Do not allow fish to come into contact with anode. Do not electrofish an area for an extended period of time. Remove fish immediately from water and handle as described below. Dark bands on the fish indicate injury, suggesting a reduction in voltage and pulse width and longer recovery time.
5. Handling and Release –Fish must be handled with extreme care and kept in water for the maximum extent possible during transfer procedures. A healthy environment for the stressed fish shall be provided—large buckets (five-gallon minimum to prevent overcrowding) and minimal handling of fish. Place larger fish in buckets separate from smaller prey-sized fish. Monitor water temperature in buckets and well-being of captured fish. As rapidly as possible

(especially for temperature-sensitive bull trout), but after fish have recovered, release fish upstream of the isolated reach in a pool or other area that provides cover and flow refuge. Document all fish injuries or mortalities and include in annual report.

Excluded Activities

The proposed action for this programmatic consultation does not include the use of treated wood in replacement bridges. When installing bridges, piers and abutments will not occur in the bankfull width. Replacing culverts using baffles or weirs (hydraulic method) is not covered by this Opinion.

6. Irrigation Screen Installation and Replacement

Description

The Action Agencies propose this activity category for existing water diversions only. Irrigation screen installation and replacement includes installing, replacing, or upgrading off-channel screens to improve fish passage or prevent fish entrapment in irrigation canals. This action also includes the removal of diversion structures that are less than six feet high, or that impound less than 15 acre-feet of water. Construction would involve use of heavy equipment, such as excavators, backhoes, front-end loaders, dump trucks, and bulldozers.

Design Criteria

1. All fish screens must be sized to match the landowner's documented or estimated historic water use or legal water right, whichever is less.
2. Irrigation diversion intake and return points must be designed (to the greatest degree possible) to prevent all native fish life stages from swimming or being entrained into the irrigation system.
3. Screens, including screens installed in temporary and permanent pump intakes, must meet NMFS fish screen criteria.
4. Bypass structures should be big enough to pass kelt steelhead.
5. Abandoned ditches and other similar structures will be plugged or backfilled, as appropriate, to prevent fish from swimming or being entrained into them.
6. When making improvements to pressurized irrigation systems, install a totalizing flow meter capable of measuring rate and duty of water use. For non-pressurized systems, install a staff gage or other measuring device capable of measuring instantaneous rate of water flow.
7. Diversion Removal
    a. Construction Actions – Remove diversion dam and water routing equipment. Heavy machinery operating from the bank or within the channel may be used to aid in removal of diversion structures. Re-watering the construction site occurs at such a rate as to prevent loss of surface water downstream as the construction site streambed absorbs water.
    b. Construction Impacts – Stream channel substrate will be minimally disturbed with the removal of the diversion dam. Restored stream flow will flush out substrate fines within the formerly dewatered area, resulting in increased but short-lived stream turbidity (usually less than 2 hours).
8. If other aquatic restoration activities are used as complementary actions, follow the associated design criteria and conservation measures.

16. Riparian Planting

Description

The Action Agencies conduct riparian vegetation planting as a means to help restore plant species composition and structure that would occur under natural disturbance regimes. The resulting benefits to the aquatic system can include desired levels of stream shade, bank stability, stream nutrients, large wood inputs, increased grasses, forbs, and shrubs, and reduced soil erosion. Activities may include the following: planting conifers, deciduous trees and shrubs; placement of sedge and rush mats; gathering and planting willow cuttings. Equipment may include excavators, backhoes, dump trucks, power augers, chainsaws, and manual tools.

Design Criteria

1. An experienced silviculturist, botanist, ecologist, or associated technician shall be involved in designing vegetation treatments.
2. No roads or landings will be constructed.
3. Species to be planted must be the same species that naturally occur in the project area.
4. Tree and shrub species, as well as sedge and rush mats to be used as transplant material, shall come from outside the bankfull width, typically in abandoned flood plains, and where such plants are abundant.
5. Sedge and rush mats should be sized to prevent their movement during high flow events.
6. Concentrate plantings above the bankfull elevation.
7. If other aquatic restoration activities included in this BA are used as complementary actions, follow the associated design criteria and conservation measures.

Conservation Measures

No additional conservation measures are required.

Excluded Activities

No excluded activities are proposed for this activity category.

17. Road Treatments

Description

The Action Agencies propose decommissioning or obliteration of roads to restore watershed function. This activity includes road decommissioning, from simple closures to more complex road obliterations, with an overall goal of restoring hydrologic functions. This category also includes stormproofing roads intended to remain open (hydrologically disconnecting such roads from watershed streams). Associated benefits include the following: Eliminating or reducing erosion and mass-wasting hazards associated with roads; eliminating or reducing human access and use-disturbance associated impacts to aquatic systems. Actions such as bridge and culvert removal, removal of asphalt and gravel, subsoiling or ripping of road surfaces, outsloping, waterbarring, fill removal, sidecast pullback, re-vegetating with native species and placement of large woody material and/or boulders are included. Roadway barricading to exclude vehicular traffic is covered only if the overall road remediation project substantively addresses restoration of hydrologic function. For culvert removals on closed roads, limited cutting or removal of vegetation on the closed road-bed to access the culvert site may be required. Construction would

involve use of heavy equipment, such as excavators, backhoes, front-end loaders, dump trucks, and bull dozers.

Design Criteria

1. For road removal projects within riparian areas, recontour the affected area to mimic natural floodplain contours and gradient to the greatest degree possible.
2. For those road segments immediately adjacent to the stream or where the road fill is near the wetted stream, consider using sediment control barriers between the project and the stream.
3. Drainage features should be spaced to hydrologically disconnect road surface runoff from stream channels.
4. Dispose of slide and waste material in stable sites out of the flood prone area. Waste material other than hardened surface material (asphalt, concrete, etc) may be used to restore natural or near-natural contours.
5. Minimize disturbance of existing vegetation in ditches and at stream crossings to the greatest extent possible.
6. Conduct activities during dry-field conditions – low to moderate soil moisture levels.
7. When removing a culvert from a first or second order, non-fishing bearing stream, project specialists shall determine if culvert removal should follow the isolation criteria as describe in Activity #5 above. Culvert removal on fish bearing streams shall adhere to the measures describe in #5 above.
8. For culvert removal projects, restore natural drainage patterns and when possible promote passage of all fish species and life stages present in the area. Evaluate channel incision risk and construct in-channel grade control structures when necessary.
9. If other aquatic restoration activities are used as complementary actions, follow the associated design criteria and conservation measures.

Conservation Measures

No additional conservation measures are proposed for this activity category.

Excluded Activities

This consultation does not cover new road construction or routine maintenance of existing roads.

18. Removal of Legacy Structures

Description

The Action Agencies propose to remove large wood, boulders, rock gabions, and other in-channel structures that were constructed to improve fish habitat but were installed in a manner that was, and continues to be, inappropriate for the given stream type. Examples of such structures, which were installed in the 1980s and early 1990s, include boulder configurations in meadow streams, stair-step perpendicular log weirs, and rock gabions. These legacy structures typically resulted in widened stream channels, increased width/depth ratios, decreased sinuosity, and increased stream exposure to solar radiation. Removal of legacy structures would include the use of excavator-type machinery, spyders, backhoes, and dump trucks.

Design Criteria

1. If the structure being removed contains material (*i.e.,* large wood, boulders, etc) not typically found within the stream or floodplain at that site, remove material from the 100-year floodplain.
2. If the structure being removed contains material (*i.e.,* large wood, boulders, etc) that is typically found within the stream or floodplain at that site, the material can be reused to implement habitat improvements described under Large Wood, Boulder, and Gravel Placement activity category in this BA following design criteria for Large Wood, Boulder, and Gravel Placement activity category.
3. If the structure being removed is keyed into the bank, fill in "key" holes with native materials to restore contours of streambank and floodplain. Compact the fill material adequately to prevent washing out of the soil during over bank flooding. Do not mine material from the stream channel to fill in "key" holes. Bring in clean top soil, if necessary, to improve vegetation reestablishment.
4. When removal of buried (keyed) structures may result in significant disruption to riparian vegetation and/or the floodplain, consider using a chainsaw to extract the portion of log within the channel, leaving the buried sections within the streambank.
5. If the legacy structures (log, rock, or gabion weirs) were placed to provide grade control, evaluate the site for potential head-cutting and incision due to structure removal. If head-cutting and channel incision are likely to occur due to structure removal, additional measures must be taken to reduce these impacts (see grade control options described under Head-cut Stabilization activity category).
6. If the structure is being removed because it has caused an over-widening of the channel, restoration measures (LW, Boulder, and Gravel Placement activity category) may be implemented to decrease the width to depth ratio of the stream at that location to a level commensurate with upstream and downstream (within the same channel type).
7. Protect riparian vegetation that has grown around legacy structures to the greatest degree possible.
8. If other aquatic restoration activities included in this BA are used as complementary actions, follow the associated design criteria and conservation measures

Conservation Measures

No additional conservation measures are proposed for this activity category.

Excluded Activities

No excluded activities are proposed for this activity category.

19. Fisheries, Hydrology, Geomorphology, Wildlife, Botany, and Cultural Surveys in Support of Aquatic Restoration Activities

Description

The Action Agencies propose to assess and monitor projects that are specifically associated with planning, implementation, and monitoring of aquatic restoration projects covered by this consultation. Such support projects may include surveys to document the following aquatic and riparian attributes: Fish habitat, hydrology, channel geomorpholgy, water quality, fish spawning, fish presence, macroinvertebrates, riparian vegetation, wildlife, and cultural resources

(including excavating test pits <1 m^2 in size). This also includes presence/absence surveys for listed terrestrial wildlife, bird, and plant species in the project area.

Design Criteria

1. Minimize amount of disturbance to fish by training personnel in survey methods that prevent or minimize disturbance of fish. Contract specifications should include these measures where appropriate.
2. Avoid impacts to fish redds. When possible, avoid sampling during spawning periods.
3. Coordinate with other local agencies to prevent redundant surveys.
4. Locate excavated material from cultural resource test pits away from stream channels. Replace all material in test pits when survey is completed and stabilize the surface.

Conservation Measures
No additional conservation measures are proposed for this activity category.

This activity category does not include surveys covered by Section 10 (a) 1a of the ESA.

General Practices and Requirements for Each Activity Category

The Action Agencies propose the following conservation measures for all activites covered by this consultation:

Technical Skill and Planning Requirements
Ensure that an experienced professional fisheries biologist, hydrologist or technician is involved in the design of all projects covered by this consultation. The experience should be commensurate with technical requirements of a project. If ESA-listed wildlife or plant species occur in the planning area, as determined by a unit wildlife biologist or botanist, the appropriate specialist will assist with project design.

1. Planning and design include field evaluations and site-specific surveys, which may include reference reach evaluations that describe the appropriate geomorphic context in which to implement the project. Planning and design involve appropriate expertise from professional staff or experienced technicians (*e.g*. engineer, silviculturist, fire and fuels specialists.)

2. The project biologist shall ensure that design criteria and conservation measures are incorporated into any implementation contract agreements. If a biologist is not the contracting officer's representative (COR), then the biologist must regularly coordinate with the project. COR to ensure the design criteria and conservation measures are being followed.

State and Federal Requirements
1. Follow the appropriate state (ODFW or WDFW) guidelines for timing of in-water work. Exceptions to ODFW and WDFW in-water work windows must be requested and granted from the appropriate state agency. Exceptions can be approved through documented phone conversations or email messages with the state agencies. Such guidelines have been

developed to prevent project implementation in fish spawning habitat when spawning is taking place or while eggs and alevins are in gravel.

2. Project actions will follow all provisions and requirements (including permits) of the Clean Water Act for maintenance of water quality standards as described by Oregon Department of Environmental Quality (Oregon FS and BLM), Washington Department of Ecology (Washington FS and BLM) and the memorandum of understanding between WDFW and the USFS regarding Hydraulic Projects Conducted by USDA Forest Service, Pacific Northwest Region, January 2005.

3. All regulatory permits and official project authorizations will be secured prior to project implementation.

Pollution and Erosion Control Plans (PECP)

The Action Agencies proposes will develop and implement a PECP for each authorized project. The PECP will include methods and measures to minimize erosion and sedimentation associated with the project. The following measures will assist in the creation of a PECP:

1. Spill Prevention Control and Containment Plan (SPCCP) – The contractor will be required to have a written SPCCP, which describes measures to prevent or reduce impacts from potential spills (fuel, hydraulic fluid, etc). The SPCCP shall contain a description of the hazardous materials that will be used, including inventory, storage, handling procedures; a description of quick response containment supplies that will be available on the site (*e.g.*, a silt fence, straw bales, and an oil-absorbing, floating boom whenever surface water is present).

2. The PECP shall be included in construction contracts or force account work plans.

3. The PECP must be commensurate with the scale of the project and include the pertinent elements listed below.
    a. Minimize Site Preparation Impacts
        i. Establish staging areas (used for construction equipment storage, vehicle storage, fueling, servicing, hazardous material storage, *etc*.) beyond the 100-year floodplain in a location and manner that will preclude erosion into or contamination of the stream or floodplain.
        ii. Minimize clearing and grubbing activities when preparing staging, project, and or stockpile areas. Stockpile large wood, trees, vegetation, sand, topsoil and other excavated material, that is removed when establishing area(s) for site restoration.
        iii. Materials used for implementation of aquatic restoration categories (*e.g.* large wood, boulders, fencing material etc.) may be staged within the 100-year floodplain.
        iv. Prior to construction, flag critical riparian vegetation areas, wetlands, and other sensitive sites to prevent ground disturbance in these areas.
        v. Place sediment barriers prior to construction around sites where significant levels of erosion may enter the stream directly or through road ditches. Maintain barriers throughout construction.

vi. Where appropriate, include hazard tree removal (amount and type) in project design. Fell hazard trees within riparian areas when they pose a safety risk. If possible, fell trees towards the stream. Keep felled trees on site when needed to meet coarse woody debris objectives.

b. Minimize Heavy Equipment Impacts

i. The size and capability of heavy equipment will be commensurate with the project.

ii. All equipment used for instream work shall be cleaned and leaks repaired prior to entering the project area. Remove external oil and grease, along with dirt and mud prior to construction. Thereafter, inspect equipment daily for leaks or accumulations of grease, and fix any identified problems before entering streams or areas that drain directly to streams or wetlands.

iii. All equipment shall be cleaned of all dirt and weeds before entering the project area to prevent the spread of noxious weeds.

iv. Equipment used for instream or riparian work shall be fueled and serviced in an established staging area outside of riparian zone. When not in use, vehicles shall be stored in the staging area.

v. Minimize the number and length of stream crossings and access routes through riparian areas. Crossings and access routes should be at right angles. Stream crossings shall not increase risks of channel re-routing at low and high water conditions and shall avoid potential listed fish spawning areas when possible.

vi. Existing roadways or travel paths will be used whenever reasonable. Minimize the number of new access paths to minimize impacts to riparian vegetation and functions.

vii. Project operations must cease under high flow conditions that inundate the project area, except for efforts to avoid or minimize resource damage.

viii. Minimize time in which heavy equipment is in stream channels, riparian areas, and wetlands. Operate heavy equipment in streams only when project specialists believe that such actions are the only reasonable alternative for implementation, or would result in less sediment in the stream channel or damage (short- or long-term) to the overall aquatic and riparian ecosystem relative to other alternatives.

c. Site Restoration

i. Upon project completion, remove project related waste.

ii. Initiate rehabilitation of all disturbed areas in a manner that results in similar or better than pre-work conditions through spreading of stockpiled materials, seeding, and/or planting with local native seed mixes or plants. Planting shall be completed no later than spring planting season of the year following construction.

iii. Short-term stabilization measures may include the use of non-native sterile seed mix (when native seeds are not available), weed-free certified straw, jute matting, and other similar techniques. Short-term stabilization measures will be maintained until permanent erosion control measures are effective. Stabilization measures will be instigated within three days of construction completion.

iv. All riparian plantings shall follow Forest Service direction described in the Regional letter to Units, Use of Native and Nonnative Plants on National Forests and Grasslands May 2006 (Final Draft), and or BLM Instruction Memorandum

No. OR-2001-014, Policy on the Use of Native Species Plant Material (Included in the BA as Appendix B).

v. When necessary, loosen compacted areas, such as access roads, stream crossings, staging, and stockpile areas.

Action Area

"Action area" means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 C.F.R. 402.02). For purposes of this consultation, the overall action area consists of the combined action areas of each project authorized under this Opinion. This includes riparian and aquatic areas affected by project implementation in the area described in the *Geographic Scope* section of this Opinion. Individual action areas also cover up to 2,500 feet downstream from the project area where aquatic habitat conditions may be temporarily degraded by increased turbidity and fine sediments in stream substrates. All projects authorized by this Opinion will occur within the following areas: (1) Streams and riparian areas on Forest Service, BLM, Coquille lands or private lands adjacent to Federal lands where Wyden amendment projects may occur; and (2) the range of ESA-listed salmon or steelhead, designated critical habitat, or EFH designated under the MSA.

The Action Agencies have concluded that the proposed action for this consultation is "likely to adversely affect" Lower Columbia River (LCR) Chinook salmon, Upper Columbia River (UCR) spring-run Chinook salmon, Puget Sound Chinook salmon, Snake River (SR) fall-run Chinook salmon, SR spring/summer-run Chinook Salmon, Upper Willamette River (UWR) Chinook salmon, Columbia River (CR) chum salmon, Hood Canal summer-run chum salmon, SR sockeye salmon, Southern Oregon/Northern California Coasts (SONCC) coho salmon, OC coho salmon, LCR coho salmon, LCR steelhead, Middle Columbia River (MCR) steelhead, UCR steelhead, SR Basin steelhead, UWR steelhead, and Puget Sound (PS) steelhead. The action areas provide spawning, rearing, and migration habitat for these species and many action areas will be within designated critical habitat for these species. Southern DPS green sturgeon uses the estuary and lower river portions of the action area as habitat for growth and development to adulthood and for adult feeding.

Action areas involved in this consultation are also designated as EFH for Pacific Coast groundfish (PFMC 1998a), coastal pelagic species (PFMC 1998b), and/or Pacific Coast salmon (PFMC 1999), or are in areas where environmental effects of the proposed project may adversely affect designated EFH for those species.

The Action Agencies have provided information in the BA regarding the number of projects they expect to cover with this consultation. This projection was developed by examining information from an interagency database on restoration actions (IRDA). Information from 1998 to 2004 shows that the Action Agencies carry out an average of 166 aquatic restoration projects per year in Oregon and Washington. Each project typically treats an average of 1.24 miles of stream. From 1998 to 2004, the total stream length treated each year averaged 119 miles and the riparian area treated averaged approximately 43 acres. The Action Agencies expect to receive similar funding for restoration projects for the next several years, so NMFS will assume for the purposes

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Oregon Fish and Wildlife Office
2600 SE 98th Avenue, Suite 100
Portland, Oregon 97266
Phone: (503)231-6179 FAX: (503)231-6195

Reply To: 8330.F0055(07)
File Name: cover letter v1.doc
TS Number: 07-516
TAILS: 13420-2007-F-0055

JUN 14 2007

Linda D. Goodman
Regional Forester, Region 6
USDA Forest Service
PO Box 3623
Portland, Oregon 97208

Ed Shepard
Director, Oregon/Washington
USDI Bureau of Land Management
PO Box 2965
Portland, Oregon 97208

Stanley Speaks
Regional Director, Northwest Region
Bureau of Indian Affairs
911 NE 11th Ave
Portland, Oregon 97232

Subject: Endangered Species Act Section 7 Formal Programmatic Consultation for Aquatic Habitat Restoration Activities in Oregon and Washington, CY 2007-CY 2012.

Dear Ms. Goodman, Mr. Shepard, and Mr. Speaks:

The enclosed document contains a programmatic biological opinion (BO) and Letter of Concurrence (LOC) on the effects of the Forest Service, Bureau of Land Management (BLM), and Bureau of Indian Affairs (BIA) (acting for the Coquille Tribe) (together termed the "Action Agencies") implementing aquatic habitat restoration activities. The Action Agencies propose to implement a suite of 19 aquatic habitat restoration activities on Action Agency and adjacent non-Federal lands in Washington and Oregon, using consistent methodology and criteria to design, implement, monitor, and document aquatic habitat restoration activities. These aquatic restoration activities are also designed for use with non ESA-listed fish (such as interior redband trout) habitat restoration projects, where these restoration actions have listed terrestrial species effects that require ESA consultation.

These aquatic habitat restoration actions may occur between CY 2007 and CY 2012 (6 years). However, administrative units that already have a BO or LOC covering aquatic restoration activities should continue to use those documents until their coverage expires and then begin

We look forward to supporting your efforts to actively implement these important aquatic habitat restoration activities.

Please contact myself or Miel Corbett at the Oregon Fish and Wildlife Office (503-231-6179) if you have any questions.

Sincerely,

Kemper M. McMaster
Project Leader

Enclosure

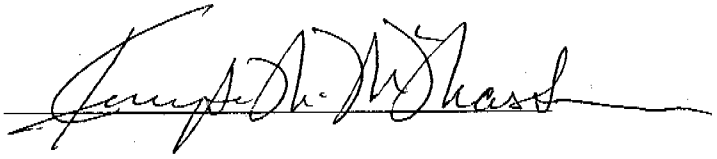
cc: Eric Murray, NMFS, La Grande, OR
Laura Hamilton, NMFS, Lacey, WA
Scott Peets, USFS, Corvallis, OR
USFS – Region 6 (Woltering, Rybak)
USBLM – Oregon State Office (Moreau, Doelker, Lint)
Jason Robinson, Coquille Tribe, North Bend, OR
USFWS – Field Offices (Klamath Falls, Newport, Bend, LaGrande, Roseburg, Portland, Lacey, Wenatchee, Spokane)
USFWS – Region 1 (Rabot, Salata, Brown, Young)

Biological Opinion and Letter of Concurrence
USDA Forest Service, USDI Bureau of Land Management
and the Coquille Indian Tribe
for
Programmatic Aquatic Habitat Restoration Activities in Oregon and Washington
That Affect ESA-listed Fish, Wildlife, and Plant Species and their Critical Habitats

8330.F0055(07)
TS Number 07-516
TAILS Number 13420-2007-F-0055

US Fish and Wildlife Service
Lead Office: Oregon Fish and Wildlife Office
Portland, Oregon

June 14, 2007



Kemper M. McMaster
State Supervisor

These are the Fish and Wildlife Service's (Service) Letter of Concurrence (LOC) and Biological Opinion (BO) with associated Incidental Take Statement for the Forest Service (FS), Bureau of Land Management (BLM), and the Coquille Indian Tribe (Coquille Tribe) (subsequently identified as the "Action Agencies"), addressing proposed programmatic aquatic habitat restoration (aquatic restoration) activities on Action Agency and adjacent private lands in Oregon, Washington, and small areas of California, Nevada, and Idaho that may affect Endangered Species Act (ESA)-listed fish, wildlife, and plant species and their critical habitats. Listed species and critical habitats that may be affected by programmatic aquatic restoration activities are identified in Table1.

Table 1. Listed species and designated critical habitat that may be affected by Action Agencies' programmatic aquatic restoration activities in Washington and Oregon.

Species	**Critical Habitat Designated?**
Bull Trout	Yes
Shortnose Sucker	Proposed
Lost River Sucker	Proposed
Warner Sucker	Yes
Oregon Chub	No
Lahontan Cutthroat Trout	No
Foskett Speckled Dace	No
Borax Lake chub	Yes
Northern Bald Eagle	No
Marbled Murrelet	Yes (Proposed Revision also Underway)
Northern Spotted Owl	Yes
Gray wolf	Yes (but none in WA or OR)
Canada Lynx	No
Grizzly Bear	No
Woodland Caribou	No
Vernal Pool Fairy Shrimp	Yes
Howells's Spectacular Thelypody	No
MacFarlane's Four-o'clock	No
Marsh Sandwort	No
Showy Stickweed	No
Ute Ladies'-tresses	No
Spalding's Catchfly	No
Wenatchee Mountains Checker-mallow	Yes
Water Howellia	No
Rough Popcornflower	No
MacDonald's Rockcress	No
Gentner's Fritillary	No
Nelson's Checker-mallow	No
Willamette Daisy	Yes
Western Lily	No
Bradshaw's Lomatium	No
Cook's Lomatium	No
Large-flowered Woolly Meadowfoam	No

Applegate's Milk-vetch	No
Golden Paintbrush	No
Malheur Wire-lettuce	Yes
Kincaid's Lupine	Yes

The LOC and BO are based on information provided in the Action Agencies' final biological assessment (BA)(USDA and USDI 2006), and cover letter dated December 13, 2006, received in the Oregon Fish and Wildlife Office (OFWO), Portland, Oregon, on December 20, 2006. Additionally, the LOC and BO are based on numerous meetings, phone conversations, emails, and other sources of information. A complete Administrative Record for this consultation is on file in the OFWO.

CONSULTATION HISTORY

In 2004, the Interagency Regional Executives' Committee (IREC, including representatives from FS, BLM, Service, and National Marine Fisheries Service [NMFS]) identified a significant shortage of programmatic consultations for aquatic restoration in the Pacific Northwest. For instance, just twenty-five percent of the FS and BLM administrative units with ESA-listed Service fish species currently have Service programmatic BOs for aquatic restoration. Many of these programmatic consultations are due to expire in 2007.

In response to this shortage of programmatic consultations, the IREC issued a December 10, 2004, memorandum that recommended the development of a new program-level aquatic restoration consultation to aid in the recovery of fish stocks on Action Agencies' lands. The IREC also directed that the new aquatic restoration programmatic consultation draw from the FS' programmatic culvert replacement BO (FWS 1-3-03-I-1482, 1-7-03-I-0395 [OR], 1-3-03-PF-1243 [WA]) and Willamette and Deschutes Province BOs (FWS 1-7-03-F-20) to expedite the process. This programmatic LOC and BO respond to the IREC's memorandum.

An interagency working group of biologists from the FS, BLM, NMFS, and Service began regularly meeting in August, 2005. The working group worked collaboratively through October, 2006, developing several draft versions of the BA, and providing extensive opportunity for multidisciplinary, multi-agency review and comment. The BA's proposed action focused on effective, state-of-the-art aquatic restoration methods, with significant conservation measures (CM) and project design criteria (PDC) focused on minimizing or avoiding adverse effects to listed species and their designated critical habitats. On March 30, 2007 and April 2, 2007, the Service forwarded draft sections of the BO and on May 1, 2007, the Service forwarded sections of the Incidental Take Statement to the Action Agencies for review. Based on discussions between the Service and Action Agencies on the draft BO sections, the Action Agencies provided the Service with several modifications to the BA's proposed action (D. Young, pers. comm., 2007; S. Peets, pers. comm., 2007).

Action Area

Action area is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR 402.02). The Action Area includes all Action Agency administrative units in Oregon and Washington, and overlapping areas in California (Rogue River-Siskiyou NF), Nevada (Lakeview and Vale BLM Districts) and

Idaho (Wallowa-Whitman NF), as well as any adjacent, non-Federal lands that may either have Wyden Projects or that are directly or indirectly influenced by Federal activities under this consultation. Table 2 presents the Action Agencies' units in Oregon and Washington, as well as their associated listed species and critical habitats.

Table 2. ESA-listed species and their critical habitat that may be affected on FS, BLM and Coquille Tribe lands.

FS Units	State(s)	Affected Species
Colville	WA	**Fish** - Bull Trout (Columbia River); **Wildlife** – BE, Canada Lynx, Gray Wolf, Grizzly Bear, Woodland Caribou; **Plants –** None
Columbia River Gorge National Scenic Area	OR/WA	**Fish –** Bull Trout (Columbia River), Lower Columbia River Chinook Salmon, Snake River Spring/Summer and Fall Chinook, Lower Columbia River Chum Salmon, Lower Columbia River Steelhead, Middle Columbia River Steelhead, Snake River Basin Steelhead; **Wildlife** – BE, NSO; **Plants** - Water Howellia
Crooked River National Grasslands	OR	**Fish-**Bull Trout, Middle Columbia River Steelhead, Middle Columbia River Spring Chinook; **Wildlife-**None; **Plants-**None
Deschutes	OR	**Fish –** Bull Trout (Columbia River); **Wildlife –** BE, NSO, Canada Lynx; **Plants** - None
Fremont-Winema	OR	**Fish –** Bull Trout (Klamath), Lost River Sucker, Shortnose Sucker, Warner Sucker; **Wildlife –** BE, NSO; **Plants –** None
Gifford Pinchot	WA	**Fish –** Bull Trout (Coastal/Puget Sound, Columbia River), Lower Columbia River Chinook Salmon, Lower Columbia River Steelhead, Middle Columbia River Steelhead; **Wildlife –** BE, Murrelet, NSO, Gray Wolf, Grizzly Bear; **Plants –** Water Howellia
Malheur	OR	**Fish –** Bull Trout (Columbia River), Middle Columbia River Steelhead; **Wildlife –**BE, Gray Wolf ; **Plants -** None
Mt. Baker-Snoqualmie	WA	**Fish –** Bull Trout (Coastal/Puget Sound), Puget Sound Chinook Salmon, Puget Sound Steelhead; **Wildlife –** BE, Murrelet, NSO, Gray Wolf, Grizzly Bear, Canada Lynx; **Plants –** None
Mt. Hood	OR	**Fish –** Bull Trout (Columbia River), Upper Willamette Chinook, Lower Columbia River Chinook, Lower Columbia River Steelhead, Middle Columbia River Steelhead **Wildlife –** NSO, BE; **Plants –** Water Howellia
Ochoco	OR	**Fish -** Bull Trout (Columbia River), Middle Columbia River Steelhead; **Wildlife –** BE; **Plants -** None
Okanogan/Wenatchee	WA	**Fish –** Bull Trout (Columbia River), Upper Columbia River Spring-Run Chinook Salmon, Middle Columbia River Steelhead, Upper Columbia River Steelhead ; **Wildlife –** BE, NSO, Canada Lynx, Gray Wolf, Grizzly Bear; **Plants –** Showy Stickseed, Ute Ladies'-tresses, Water Howellia, Wenatchee Mts. Checker-Mallow
Olympic	WA	**Fish -** Bull Trout (Coastal/Puget Sound), Puget Sound Chinook Salmon, Hood River Canal Summer-Run Chum Salmon, Puget Sound Steelhead; **Wildlife –** BE, Murrelet, NSO; **Plants –** Marsh Sandwort
Rogue River/Siskiyou	OR	**Fish –** Southern Oregon/Northern California coho salmon **Wildlife –** BE, Murrelet, NSO; **Plants –** MacDonald's Rockcress, Gentner's Fritillary, Cook's Lomatium
Siuslaw	OR	**Fish –** Oregon Coast coho salmon MSA/EFH; **Wildlife –** Oregon Silverspot butterfly**,** NSO, BE, Murrelet, Western Snowy Plover **Plants –** Western Lilly, Nelson's Checkermallow
Umatilla	OR/WA	**Fish –** Bull Trout (Columbia River), Snake River Spring/Summer and Fall-Run Chinook Salmon, Middle Columbia River Steelhead, Snake River Basin Steelhead; **Wildlife –** BE, Gray Wolf; **Plants –** Spalding's Catchfly
Umpqua	OR	**Fish –** Oregon Coast coho salmon MSA/EFH only; **Wildlife –** NSO, BE; **Plants** – Kincaid's Lupine, Rough Popcorn Flower

Wallowa-Whitman	OR	**Fish –** Bull Trout (Columbia River), Snake River Spring/Summer and Fall Chinook, Middle Columbia Steelhead, Snake River Steelhead, Snake River Sockeye ; **Wildlife –** BE, Gray Wolf ; **Plants -** Howell's Spectacular Thelypody, MacFarlane's Four-O'clock, Spalding's Catchfly, Ute Ladies'-Tresses, and Water Howellia
Willamette	OR	**Fish –** Bull Trout (Columbia River), Oregon chub, Upper Willamette River Spring Chinook, Upper Willamette River Steelhead; **Wildlife –**BE, NSO; **Plants** -None
BLM Units	**State(s)**	**Affected Species**
Burns	OR	**Fish –** Bull Trout (Columbia River), Lahontan Cutthroat Trout**,** Borax Lake Chub; **Wildlife** – BE, Canada Lynx; **Plants –** Malheur Wire Lettuce
Coos Bay	OR	**Fish –** Southern Oregon/Northern California coho salmon, Oregon Coast coho salmon MSA/EFH; **Wildlife –** BE, Murrelet, NSO**,** Western Snowy Plover, California Brown Pelican, Northern Sea Lion; **Plants –** Western Lily
Eugene	OR	**Fish** – Bull Trout, Upper Willamette Spring-Run Chinook, Oregon Coast coho salmon MSA/EFH, Upper Willamette Basin Steelhead, Oregon Chub; **Wildlife** – BE, NSO, Murrelet, California Brown Pelican, Fenders Blue Butterfly; **Plants** – Kincaid's Lupine, Willamette Daisy, Bradshaw's Lomatium, Golden Paintbrush, Water Howellia
Klamath Falls	OR	**Fish** – Bull Trout, Lost River Sucker, Shortnose Sucker; **Wildlife** – BE, NSO; **Plants** – Applegate's Milk-Vetch, Gentner's Fritillary
Lakeview	OR	**Fish** – Warner Sucker, Foskett Speckled Dace; **Wildlife** – BE; **Plants** – None
Medford	OR	**Fish** –Southern Oregon/Northern California Coastal coho, Vernal Pool Fairy Shrimp; **Wildlife** – BE, Murrelet, NSO; **Plants** – Gentner's Fritillary, Cook's Lomatium
Prineville	OR	**Fish** – Bull Trout, Middle Columbia Summer-Run Steelhead **Wildlife** – BE, Canada Lynx; **Plants** – None
Roseburg	OR	**Fish** – Southern Oregon/Northern California coho salmon, Oregon Coast coho salmon MSA/EFH; **Wildlife** – BE, NSO, Murrelet; **Plants** – Rough Popcorn flower, Kincaid's Lupine
Salem	OR	**Fish** – Oregon Chub, Upper Willamette Spring-Run Chinook, Lower Columbia Spring and Fall-Run Chinook, Columbia River Chum Salmon, Lower Columbia/SW Washington coho salmon, Oregon Coast coho salmon MSA/EFH, Lower Columbia Summer and Winter-Run Steelhead, Upper Willamette Basin Steelhead; **Wildlife** – BE, Murrelet, NSO, California Brown Pelican, Western Snowy Plover; **Plants** – Nelson's Checkermallow, Kincaid's Lupine, Willamette Valley Daisy, Water Howellia, Bradshaw's Lomatium, Golden Paintbrush
Spokane	WA	**Fish** – Bull Trout (Columbia River), Upper Columbia Spring-Run Chinook Salmon, Upper Columbia Steelhead, Lower Columbia Winter-Run Steelhead, Middle Columbia Winter-Run Steelhead **Wildlife** – BE, Gray Wolf, Woodland Caribou, Canada Lynx, Grizzly Bear; **Plants** – Showy Stickseed, Marsh Sandwort, Golden Paintbrush, Kincaid's Lupine, Wenatchee Mountain Checkermallow, Nelson's Checkermallow, Spalding's Catchfly, Ute's Ladies-Tresses, Water Howellia
Vale	OR	**Fish** – Bull Trout (Columbia River), Snake River Fall, Spring and Summer-Run Chinook, Snake River Basin Steelhead, Snake River Sockeye, Middle Columbia Steelhead, Lahontan Cutthroat Trout **Wildlife** – BE, Canada Lynx, Gray Wolf; **Plants** – Howell's Spectacular Thelypody, MacFarlane's Four O'Clock, Spalding's Catchfly
Coquille Tribe	**State**	**Affected Species**
	OR	**Fish** – Oregon Coast coho salmon MSA/EFH; **Wildlife** – BE, NSO, Murrelet

LETTER OF CONCURRENCE

The proposed action is designed to ensure aquatic restoration activities will not exceed a level of "Not Likely to Adversely Affect" for listed terrestrial species, desert spring-dwelling fish species (A. Doelker, pers. comm., 2006), and their critical habitats. Any aquatic restoration action must not adversely affect any listed desert spring-dwelling fish or their designated critical habitat. They will not adversely affect any listed terrestrial species or their designated critical habitat, including marbled murrelet (murrelet) and Northern spotted owl (NSO) critical habitat. Any action that cannot fulfill this requirement will necessitate a separate ESA consultation. A single exception to this requirement is the Action Agencies' request for limited occurrences of adverse effect and potential incidental take (due to disturbance) to murrelets, NSOs, and Northern bald eagles (BE), from certain aquatic restoration activities, for those Action Agency administrative units where one or more of these three listed birds are present. Therefore, this LOC will not address actions that adversely affect murrelets, NSOs, and BEs via disturbance.

Based on the proposed action, as described in your BA and additional information provided May 25, 2007, the Service concurs with your determination that the proposed action may affect, but is not likely to adversely affect, the following listed species and designated critical habitat: vernal pool fairy shrimp and its critical habitat, Howells's spectacular thelypody, MacFarlane's four-o'clock, marsh sandwort, showy stickweed, Spalding's catchfly, Ute ladies'-tresses, water howellia, Wenatchee Mountains checker-mallow and its critical habitat, rough popcornflower, MacDonald's rockcress, Gentner's fritillary, Nelson's checker-mallow, western Lily, Willamette daisy and its critical habitat, Bradshaw's lomatium, Cook's lomatium, large-flowered woolly meadowfoam, Applegate's milk-vetch, Malheur wire-lettuce and its critical habitat, golden paintbrush, Kincaid's lupine and its critical habitat, Borax Lake chub and its critical habitat, Foskett speckled dace, grizzly bear, woodland caribou, gray wolf, and Canada lynx. In addition, the Service concurs with your determination that the proposed action may affect, but is not likely to adversely affect, designated critical habitat for the murrelet and NSO.

Our concurrence is based upon: 1) your general and species-specific PDCs and CMs that are included in the proposed action. The PDCs and CMs restrict and control implementation of the proposed aquatic restoration action to times, locations and methods that will avoid adverse effects to the listed terrestrial and aquatic species, above, and their designated critical habitats; 2) the requirement that a wildlife biologist and botanist participate with the planning team and determine whether listed terrestrial species are present in the project area, and to subsequently assist with project design to avoid adverse effects; and 3) the requirement that all aquatic restoration projects be designed (except for the limited number projects that may adversely affect the murrelet, NSO, and BE via disturbance, as noted above) to be Not Likely to Adversely Affect to listed terrestrial species and their designated critical habitats.

Our concurrence that actions will not adversely affect NSO critical habitat is more specifically based on the following: 1) actions will not measurably reduce the quantity or quality of NSO nesting, roosting, foraging (NRF), or dispersal habitat at the stand level; 2) actions will not remove or reduce the overall function a known NSO nest tree (but a potential NSO nest tree may be removed outside the NSO breeding season if nest trees are not limiting within the stand); and 3) proposed actions will not reduce the capability of critical habitat to provide NRF or dispersal habitat for NSO conservation and recovery at the province, sub-province, or individual critical habitat unit level because activities will be designed specifically to avoid adverse effects to NSO

critical habitat. Consequently, treatments (e.g., burns, thinning) will not remove or reduce the overall capability of NSO critical habitat to provide its foraging component by removing understory used by NSO prey species. Projects will not remove known NSO nest trees, except as noted above. Finally, thinning actions will be dispersed across the action area. Material removed from these actions will be insignificant relative to the stand-level and overall programmatic action area.

Our concurrence that actions will not adversely affect murrelet critical habitat is more specifically based on the following: 1) actions will not adversely affect the primary constituent elements of murrelet habitat (i.e., individual nest trees with potential nesting platforms and forested lands of at least one half site potential tree height regardless of contiguity within 0.8 km (0.5 miles) of individual trees with potential nesting platforms, and that are used or potentially used by murrelets for nesting or roosting. The site-potential tree height is the average maximum height for trees given the local growing conditions, and is based on species-specific site index tables); and 2) most construction activities will occur along and near roads where vegetation has been previously altered or removed, or in riparian areas where no suitable murrelet habitat occurs (e.g., pre-commercial thinning of a plantation). While potential murrelet nest trees may be removed if they are hazard trees, these will not be removed during the murrelet nesting season and will only be removed if there are sufficient levels of murrelet nest trees within the stand (i.e., removing the tree will not reduce capability of stand to function as murrelet nesting habitat).

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The Action Agencies have determined, on page 1 of the BA (USDA and USDI 2006), the following proposed aquatic restoration programmatic actions are consistent with the Record of Decision and the Standards and Guidelines of the Northwest Forest Plan (USDA and USDI 1994), inclusive of the Aquatic Conservation Strategy, as well as INFISH (USDA and USDI 1995a) and PACFISH (USDA and USDI 1995b).

The Action Agencies propose to programmatically implement aquatic restoration activities on Action Agency lands, and adjacent non-Federal lands under Wyden Amendment authority when a project directly assists the Action Agencies in achieving their aquatic restoration goals, in Washington and Oregon (and overlapping areas in California [Rogue River-Siskiyou National Forest], Nevada [Lakeview and Vale BLM District], and Idaho [Wallowa-Whitman National Forest]), using consistent methodology and criteria to design, implement, monitor, and document aquatic restoration activities. These programmatic aquatic restoration activities are also designed for use with non ESA-listed fish (e.g., redband trout) habitat restoration projects, where these restoration actions have listed terrestrial species effects that require ESA consultation. These aquatic restoration actions may occur between CY 2007 and CY 2012 (6 years).

Wyden Amendment restoration projects on adjacent non-Federal lands must follow all elements outlined in this Proposed Action section. The Action Agencies shall retain discretion over each non-Federal land Wyden project action in order to ameliorate unexpected adverse effects during and after project implementation.

Aquatic restoration projects, funded through the Knutson-Vandenberg Act (KV), Stewardship Contract project revenues, or Emergency Relief for Federally Owned Roads (ERFO), must follow all elements outlined in this Proposed Action section. Additionally, the KV projects must be "non-essential" (those that are not required to implement mitigative portions of a timber sale). The ERFO projects must be directly linked to aquatic restoration.

Aquatic restoration methods proposed are commonly implemented on Action Agency lands. The aquatic restoration activities are predictable as to their effects to ESA listed species, consistent with broad scale aquatic conservation strategies, and are designed using the best available aquatic restoration science. This programmatic consultation does not include those habitat restoration actions that have limited application, or which are only applicable to a limited number of administrative units. This consultation also is not intended to cover aquatic restoration actions that are overly complex or result in high risk to listed species during and/or after project implementation. Projects not consistent with the appropriate programmatic PDCs and CMs will require separate consultation.

The BA provided the following instruction to Action Agency administrative units: "Administrative units that already have a biological opinion or concurrence letter covering aquatic restoration activities should continue to use those documents until their coverage expires and then begin using this programmatic consultation. Aquatic restoration actions not covered in this BA can be covered in new local or provincial Biological Assessments. However, future (until 2012) local or provincial BAs cannot include actions covered in the BA. Further, invasive plant treatments included in this BA are to serve FS, BLM, and Coquille Tribe administrative units until such units complete a local or provincial consultation for this activity type."

Aquatic habitat projects are designed and implemented to restore or enhance stream and riparian area function and fish habitat. These projects will improve channel dimensions and stability, sediment transport and deposition, riparian, wetland, and floodplain functions, hydrologic function, as well as water quality. Furthermore, such improvements will help address limiting factors—related to spawning, rearing, migration, and more—for ESA-listed and other native fish species. This BO addresses the following 19 aquatic restoration program activity categories:

1. Large Wood, Boulder, and/or Gravel Placement (includes tree removal for large wood projects)
2. Reconnection of Existing Side Channels and Alcoves
3. Head-cut Stabilization and Associated Fish Passage
4. Bank Restoration
5. Fish Passage Culvert and Bridge Projects
6. Irrigation Screen Installation and Replacement and Weir Removal
7. In-channel Nutrient Enhancement
8. Floodplain Overburden Removal
9. Reduction of Recreation Impacts
10. Estuary Restoration
11. Riparian Vegetation Treatment (non-commercial, mechanical)
12. Riparian and Upland Juniper Treatment (non-commercial)
13. Riparian Vegetation Treatment (controlled burning)
14. Riparian Area Invasive Plant Treatment
15. Riparian Exclusion Fencing (with water gaps and stream crossings)

16. Riparian Vegetation Planting
17. Road Treatments
18. Removal of Legacy Structures
19. Fisheries, Hydrology, Geomorphology, Wildlife, Botany, and Cultural Surveys in Support of Aquatic Restoration

The Aquatic Restoration Activities Descriptions section, below, provides an extensive narrative and tabular summarization of aquatic restoration activity categories, including aquatic restoration activity descriptions, PDCs, CMs, and excluded activities.

Aquatic restoration projects that include the use of heavy machinery within the bankfull channel may result in adverse effects to listed aquatic species and their critical habitat, and are generally of greater concern to the Service, as they may result in, at a minimum, project-related sediment introduced into the stream during and after project construction, short-term riparian disturbance, and/or harassment or harm of ESA-listed fish during project implementation activities. These higher impact projects are termed Group One activities (Table 3). Group Two activities (Table 4) includes those projects that typically occur outside of bankfull channel, and will either result in lesser amounts of sediment introduced into the stream during and after project construction, minor, short-term disturbance of riparian areas, and/or other direct adverse effects to ESA-listed fish during project implementation activities. Some activity types have components that are identified under both Group One and Group Two activities (e.g., Road Treatments).

A maximum of 10 Group One projects per 5th field watershed per year is proposed. The maximum number of Group One projects per 5th field watershed per year was selected to ensure that aquatic restoration activities, with some short-term adverse effects, would not collectively compromise 5th field watershed function or listed fish population viability as these activities moved watersheds and their listed fish populations towards great functionality and viability. The 10 Group One projects may consist of the same activity type or a mixture of the 10 types included in Table 3. More than 10 Group One activity projects may be conducted per year in a 5th field watershed, as long as the overall negative effects of all Group One projects conducted annually in a 5th field watershed are not greater than the negative effects anticipated for each 5th field watershed per year. **Only a limited number of combined Group One and Group Two activities may adversely affect BEs, NSOs, and murrelets via disturbance** (see PDCs and CMs for listed birds and their critical habitat).

A maximum of 375 Group One aquatic restoration activities per year are proposed. This maximum number of action area annual activities has been divided into representative geographic units, and includes: 250 Group One activities in the Columbia River basin (includes Columbia River DPS bull trout and Oregon chub activities), 75 Group One activities in the Coastal-Puget Sound bull trout DPS, 30 Group One activities in the Klamath River basin (includes Klamath River DPS bull trout, Lost River sucker, and shortnose sucker activities), 10 Group One activities in the Warner basin (Warner sucker activities), and 10 Group One activities in the basins containing Lahontan cutthroat trout in southeastern Oregon.

Table 3. Group One aquatic restoration activity categories.

Activity Type	Project Definition Per 5th Field Watershed
Large Wood, Boulder, and/or Gravel Placement	One project is equal to: 15 stream miles of helicopter placement or five miles using cable yarding

	equipment or one stream mile of placement with excavator-type equipment
Reconnection of Existing Side Channels and Alcoves	One project is equal to one side channel/alcove project
Head-cut Stabilization and Associated Fish Passage	One project is equal to one headcut project and associated fish passage structures
Bank Restoration	One project is equal to stabilization of eroding banks along less than 0.5 mile of stream
Fish Passage Culvert and Bridge Projects	One project is equal to removal or replacement of one road crossing structure
Irrigation Screen Installation and Replacement (weir removal)	One project is equal to removal of one in-channel weir structure
Estuary Restoration (tide gate removal)	One project is equal to removal of one tide gate
Riparian and Upland Juniper Treatment (non-commercial)(heavy machinery and vegetation removal)	One project is equal to a project that uses heavy equipment (e.g., feller buncher) in riparian area to cut juniper or remove juniper from where they were cut
Road Treatments (below bankfull or with hydrologic connectivity)	One project is equal to one mile of road treatments where the road-bed is altered with heavy equipment within the bankfull channel or above bankfull when high degree of connectivity occurs between road and listed fish stream
Riparian Area Invasive Plant Treatment (herbicide use in all areas and manual/ mechanical removal within the bankfull width)	Within each sixth field subwatershed containing listed aquatic species, no more than 10% of the total riparian area will be treated within any one year period
Riparian Vegetation Planting (heavy equipment use)	One project equals an action that uses heavy machinery to cross stream or conduct work activities in one mile of stream below bankfull
Riparian Exclusion Fencing (water gaps and stream crossings)	One project is equal to one stream crossing or water gap
Floodplain Overburden Removal	One project is equal to overburden removal along one mile of stream. Includes floodplains on both sides of stream
Removal of Legacy Structures	One project is equal to one stream mile of legacy structure removal

There is **no limit as to the number and extent of the Group Two projects** that may be annually conducted within a 5th field watershed, **as long as these actions do not exceed the limited amount of proposed, adverse effect for terrestrial species and/or their critical habitat**. Only a limited number of combined Group One and Group Two activities may adversely affect BEs, NSOs, and murrelets per year (See PDCs for listed birds and their critical habitat).

Table 4. Group Two aquatic restoration activity categories.[1]

Activity Type	**Project Definition Per 5th Field Watershed**
Irrigation Screen Installation and Replacement	No limit on number of screens
In-Channel Nutrient Placement	No limit on number of miles treated
Estuary Restoration*	No limit on number of acres treated

Riparian Vegetation Treatment (non-commercial)	No limit on number of acres treated
Riparian and Upland Juniper Treatment (non-commercial)	No limit on number of acres treated, no heavy machinery used, felled juniper left on site
Riparian Vegetation Treatment (controlled burning)	No limit on number of acres treated
Riparian Exclusion Fencing	No limit on riparian acres or stream miles fenced
Riparian Vegetation Planting	No limit on number of acres treated, no heavy machinery used below bankfull
Road Treatments (limited hydrologic connectivity)	No limit on road miles treated for roads outside of bankfull channel when limited connectivity occurs between road and stream.
Riparian Area Invasive Plant Treatment (manual/mechanical removal outside of the bankfull width)	Within each sixth field HUC containing listed aquatic species, no more than 10% of the total riparian area will be treated within any one year period.
Floodplain Overburden Removal	No limit on acres treated which occur outside of bankfull channel. (Mine tailing removal projects are not included)
Reduction of Recreation Impacts	No limit on miles or acres treated
Survey and Monitoring	No limit on acres or miles surveyed
[1] Unlimited number/extent of Group Two projects as long as these actions do not result in an adverse effect for terrestrial species and/or their critical habitat, except for a limited amount of adverse effect for listed birds (See PDC for listed birds and their critical habitat). * Estuary projects could result in increased sediment into the water column. However, tidal waters typically carry high sediment loads, so the overall contribution of sediment to the water column from this project type is considered to be insignificant.	

All other aquatic restoration activities must be designed to avoid adverse effects to listed terrestrial species (birds, mammals, plants, invertebrates), with the following exception: The Action Agencies proposed a limited amount of adverse effects, in the form of disturbance, for three NSOs and five murrelets per year per administrative unit, and one BE per year per covered administrative unit. Five units (Fremont-Winema NF, Siuslaw NF, Deschutes NF, Medford BLM, and Lakeview BLM) are covered for this limited amount of BE adverse effects due to greater amounts of BE nesting activity on these units.

Programmatic Implementation and Compliance Process

The Action Agencies propose the following procedures, commitments, and controls to maximize implementation effectiveness and/or to minimize ESA effects to listed species and their critical habitats during and after programmatic aquatic restoration projects:

1. Conservation Measures and PDCs: All projects will be guided by PDCs that help restore or enhance stream channel, riparian, wetland, and/or upland functions and conditions that closely mimic those that would occur under natural disturbance regimes, and by CMs that seek to minimize project negative effects on listed species and their critical habitats;
2. Restricted number of Group One aquatic restoration actions per 5th field watershed per year;

3. Restricted number of aquatic restoration actions that adversely affect listed birds per administrative unit per year;
4. Project site review, if suitable habitat is present, to minimize or avoid effects to listed terrestrial species;
5. Monitoring during and after project implementation to ensure effects are not greater than the amount and extent anticipated;
6. Action Agencies commitment to address unanticipated problems, as identified during project monitoring;
7. Level 1 Team participation with each individual aquatic restoration project: Project Notification Form submittal associated with pre-project Level 1 Team discussion, post-project review and report.

Aquatic restoration projects that are compliant with this BO will be designed and implemented using the following four steps:

1. **Integration of PDCs, CMs, and Terms and Conditions into Project Design and Contract Language** – The aquatic restoration project leader will integrate species and activity category-appropriate PDCs, CMs, and Incidental Take Statement terms and conditions (from Service BO) into the proposed aquatic restoration action. Appropriate PDCs, CMs and terms and conditions listed in the BO also shall be incorporated into contract language or force-account work plans. The Action Agencies shall observe and fulfill the above-mentioned PDCs, CMs and terms and conditions during all phases (pre-project, implementation, post-project) of the actual aquatic restoration project.

2. **Project Notification and Reporting** – Local Level 1 Teams will meet on at least an annual basis to discuss planned and completed projects. The date of the meeting will be determined by the local Level I team. This notification/reporting process may be adapted to adhere to the local Level 1 Team meeting schedule, operating protocols, and forms. Because the aquatic restoration activities have already proceeded through formal programmatic consultation, such Level 1 meetings shall not be used by the Action Agencies to acquire additional approval from the NOAA or Service Level 1 Team members. However, the Action Agencies do recognize the fact that NOAA and Service Level 1 Team members can offer additional site specific information that may aid project planners.

   a) Pre-Project Notification– Level 1 teams will discuss aquatic restoration projects planned for implementation during the upcoming work season. If more than 10 Group One projects are proposed for a 5th field watershed in a given year, the Action Agency must provide the Level 1 Team with justification as to why the overall effects of additional Group One activities does not exceed those effects analyzed in this BO. Regulatory biologists may provide additional information that will assist in project design (e.g., early spawning timing anticipated due to an ongoing drought). A Project Notification Form shall be provided to the Service Level 1 Team member(s) prior to the meeting and should include the following proposed project information:
      i. Location – 6th field watershed and stream name, 5th field watershed name
      ii. Timing – Project start and completion dates
      iii. Activity Type – All that apply from Aquatic Restoration Activities Descriptions section, below.

iv. **Project Description** – Brief narrative of the project and objectives
v. **Extent** – Number of stream miles or acres to be treated
vi. **Species/Critical Habitat Affected** – Listed Fish and or Wildlife species, Critical Habitat affected by the project, any anticipated fish or listed bird take.

b) Completed Projects – Level 1 teams will discuss aquatic restoration projects completed during the previous work season. The Action Agencies also will report to the Level I team on all Group One and Group Two projects implemented the previous year. This includes Wyden projects. The reports would include the following information necessary for Service tracking needs:
   i. **Location** –6th field watershed and stream name, 5th field watershed name
   ii. **Timing** – Project start and dates
   iii. **Activity Type** – All that apply from Aquatic Restoration Activities Descriptions section, below
   iv. **Project Description and Success** – Brief narrative of the project, objectives, and project implementation success
   v. E**xtent** – Number of stream miles or acres treated
   vi. **Species/Critical Habitat Affected** – Fish and/or Wildlife species affected by the project, Critical Habitat
   vii. **Fish Handling** – If fish were handled during rescue operations, the project biologist will describe removal methods, stream conditions, and the number of fish affected.
   viii. **Any Authorized Incidental Take**
   ix. **Number of Northern Spotted Owl, Bald Eagle, or Marbled Murrelet nests disturbed during critical nesting period, or the amount of suitable, unsurveyed NSO or murrelet habitat within the disturbance distance of the action (by project).**
   x. **Agency Name** – Agency and project leader name
   xi. **Date of submittal**

3. **Monitoring Requirements –** Monitoring will be conducted during project implementation and after project completion.
   a) Monitoring during Project Implementation and Follow-up Remedial Activities if Necessary:
      i. Monitor during each project's implementation to ensure effects are not greater than anticipated for each Aquatic Restoration activity category. Refer to BO's effects analysis for specific Indicators of concern to monitor for each Aquatic Restoration activity category. Contact Level 1 representatives if problems arise.
      ii. If project-related turbidity extends below most downstream point of project for more than ¼ mile (project sites where fine sediments are a minor component of the substrate being disturbed) or ½ mile (project sites where fine sediments are a significant component of the substrate being disturbed), immediately evaluate project area for project-related erosion, excess sediment deposition, or other signs of project-related excess sediment impacts. If additional turbidity impacts are extending further than anticipated from project, immediately contact Level 1.
      iii. Regular biologist coordination with Contracting Officer's Representative if biologist is not always on site to ensure contractor is following all stipulations.
   b) Post project Assessment and Follow-up Remedial Activities if Necessary– A post-project review shall be conducted after winter high flows/rains. This may consist of a simple walk through assessment to answer the following:

i. Are there post-project effects that were not considered during consultation?
ii. Fish Passage Culverts and Weir Removal Projects: Assess the following additional monitoring parameters, as applicable: headcutting below natural stream gradient, substrate embeddedness in the culvert, scour at the culvert outlet, and erosion from sites associated with project construction goals. The presence of these concerns may indicate that project goals have not been met.
iii. In cases where remedial action is required, such actions are permitted without additional consultation if they use PDCs and CMs listed in the Aquatic Restoration Activities Descriptions section, below, and the effects of programmatic actions described in this BO are not exceeded.

4. **Level 1 Team Field Review** - At its discretion, the Level 1 Team may conduct field reviews to determine a project's consistency with the BA/BO.

Aquatic Restoration Activities Descriptions

The Action Agencies propose to implement aquatic restoration activities within19 activity categories. The following aquatic restoration activities description is divided into two sections. The first section provides general project descriptions and general PDCs, as well as the philosophical underpinnings of why and how aquatic restoration projects will be conducted. This section also includes general CMs to be commonly applied to all 19 activity categories, developed to minimize adverse effects to the aquatic environment, ESA-listed fish species and their designated Critical Habitat. The second section of the narrative provides specific project activity descriptions for each of the 19 proposed aquatic restoration activity categories, including PDCs and CMs that are specific to that particular activity. Excluded activities, defined as those actions that have effects which are not predictable on the scale of this consultation, are defined for each of the 19 activity categories. The Action Agencies are not discouraged from conducting these excluded aquatic restoration activities, but such activities are not addressed in this consultation and must therefore independently comply with ESA requirements.

General Project Descriptions

Aquatic habitat projects are designed and implemented to restore or enhance stream and riparian area function and fish habitat. These projects will improve channel dimensions and stability, sediment transport and deposition, and riparian, wetland, floodplain and, hydrologic functions, as well as water quality. Furthermore, such improvements will help address limiting factors related to spawning, rearing, migration, and more, for ESA-listed and other native fish species. Aquatic restoration and enhancement projects are conducted within stream channels, adjacent riparian/floodplain areas, wetlands, and uplands. Work may be accomplished using manual labor, hand tools (chainsaws, tree planting tools, augers, shovels, and more), all-terrain vehicles, flat-bed trucks, and heavy equipment (backhoes, excavators, bulldozers, front-end loaders, dump trucks, winch machinery, etc). Helicopters will be used for many large wood and salmon carcass placement projects.

1. General PDCs and CM Applicable to All Activity Categories.

a) General PDCs: All projects will be guided by PDCs that help restore or enhance stream channel, riparian, wetland, and/or upland functions that would occur under natural disturbance regimes.

b) General CMs: CMs are intended to minimize effects to the aquatic environment, and the following apply, when relevant, to all 19 activity types:

i. **Technical Skill and Planning Requirements**

a. Ensure that an experienced professional fisheries biologist, hydrologist or technician is involved in the design of all projects covered by this BO. The experience should be commensurate with technical requirements of a project. If ESA-listed wildlife/plant species occur in the planning area, as determined by a unit wildlife biologist or botanist, the appropriate specialist will assist with project design.

b. Planning and design includes field evaluations and site-specific surveys, which may include reference reach evaluations that describe the appropriate geomorphic context in which to implement the project. Planning and design involves appropriate expertise from professional staff or experienced technicians (e.g., engineer, silviculturist, fire/fuels specialists.)

c. The project biologist should insure that PDCs and CMs are incorporated into any implementation contract agreements. If a biologist is not the Contracting Officers Representative (COR), then the biologist must regularly coordinate with the project COR to insure the PDCs and CMs are being followed.

ii. **State and Federal Requirements**

a. Follow the appropriate state (Oregon Department of Fish and Wildlife (ODFW) or Washington Department of Fish and Wildlife (WDFW)) guidelines for timing of in-water work. Exceptions to ODFW and WDFW in-water work windows must be requested and granted from the appropriate state agency. Exceptions can be approved through documented phone conversations or email messages with the state agency(s). Such guidelines are intended to prevent project implementation in fish spawning habitat when fish spawning is taking place or while eggs and young fish are in or associated with channel substrates.

b. Project actions will follow all provisions and requirements (including permits) of the Clean Water Act for maintenance of water quality standards as described by Oregon Department of Environmental Quality (Oregon FS and BLM), Washington Department of Ecology (Washington FS and BLM) and the MOU between WDFW and the FS regarding Hydraulic Projects Conducted by USDA Forest Service, Pacific Northwest Region, January 2005.

c. All regulatory permits and official project authorizations will be secured prior to project implementation.

iii. **Pollution and Erosion Control Plans** – Administrative Units will develop and implement a Pollution and Erosion Control Plan (PECP) for each authorized project, one that includes methods and measures to minimize erosion and sedimentation associated with the project. The following measures will assist in the creation of a PECP.

a. Spill Prevention Control and Containment Plan (SPCCP) **–** The contractor will be required to have a written SPCCP, which describes measures to prevent or reduce impacts from potential spills (fuel, hydraulic fluid, etc). The SPCCP shall contain a description of the hazardous materials that will be used, including inventory, storage, handling procedures; a description of quick response containment supplies that will be available on the site (*e.g.*, a silt fence, straw bales, and an oil-absorbing, floating boom whenever surface water is present.)

b. The PECP should be included in construction contracts or force account work plans.

c. The PECP must be commensurate with the scale of the project and include the pertinent elements of iv, v, vi, and vii listed below.

iv. **Minimize Site Preparation Impacts**

a. Establish staging areas (used for construction equipment storage, vehicle storage, fueling, servicing, hazardous material storage, etc) beyond the 100-year floodplain in a location and manner that will preclude erosion into or contamination of the stream or floodplain.
b. Minimize clearing and grubbing activities when preparing staging, project, and or stockpile areas. Stockpile large wood, trees, vegetation, sand, topsoil and other excavated material, that is removed when establishing area(s) for site restoration
c. Materials used for implementation of aquatic restoration categories (e.g., large wood, boulders, fencing material etc.) can be staged within the 100-year floodplain.
d. Prior to construction, flag critical riparian vegetation areas, wetlands, and other sensitive sites to prevent ground disturbance in these areas.
e. Place sediment barriers prior to construction around sites where significant levels of erosion may enter the stream directly or through road ditches. Maintain barriers throughout construction.
f. Where appropriate, include hazard tree removal (amount and type) in project design. Fell hazard trees within riparian areas when they pose a safety risk. If possible, fell trees towards the stream. Keep felled trees on-site when needed to meet coarse woody debris objectives.
g. Wildlife biologist should determine if a hazard tree is a potential ESA listed bird nest tree. Nesting trees that are hazardous to restoration activities may only be removed outside of active nesting season. No BE nest trees will be removed. Hazard trees that are also suitable NSO and murrelet nest trees may only be removed if there are sufficient alternative suitable NSO and murrelet nest trees within the same stand that the hazard tree is located.

v. **Minimize Heavy Equipment Impacts**

a. Consider contracting with operators who use non-petroleum lubricants and fluids in their machinery.
b. The size and capability of heavy equipment will be commensurate with the project.
c. All equipment used for instream work shall be cleaned and leaks repaired prior to entering the project area. Remove external oil and grease, along with dirt and mud prior to construction. Thereafter, inspect equipment daily for leaks or accumulations of grease, and fix any identified problems before entering streams or areas that drain directly to streams or wetlands
d. All equipment shall be cleaned of all dirt and weeds before entering the project area to prevent the spread of noxious weeds.
e. Equipment used for instream or riparian work shall be fueled and serviced in an established staging area outside of riparian zone. When not in use, vehicles shall be stored in the staging area.
f. Minimize the number and length of stream crossings and access routes through riparian areas. Crossings and access routes should be at right angles. Stream crossings shall not increase risks of channel re-routing at low and high water conditions and shall avoid potential listed fish spawning areas when possible.
g. Existing roadways or travel paths will be used whenever reasonable. Minimize the number of new access paths to minimize impacts to riparian vegetation and functions.

h. Project operations must cease under high flow conditions that inundate the project area, except for efforts to avoid or minimize resource damage.
i. Minimize time in which heavy equipment is in stream channels, riparian areas, and wetlands. When operating heavy equipment in stream channels it is because project specialists reasoned that such actions are the only reasonable alternative for implementation and/or would result in less sediment in the stream channel or damage (short- or long-term) to the overall aquatic/riparian ecosystem relative to other alternatives.

vi. **Site Restoration**

a. Upon project completion, remove project related waste.
b. Initiate rehabilitation of all disturbed areas in a manner that results in similar or better than pre-work conditions through spreading of stockpiled materials (from b.iv.b. above), seeding, and/or planting with locally native seed mixes or plants. Planting shall be completed no later than spring planting season of the year following construction.
c. Short-term stabilization measures may include the use of non-native sterile seed mix (when native seeds are not available), weed-free certified straw, jute matting, and other similar techniques. Short-term stabilization measures will be maintained until permanent erosion control measures are effective. Stabilization measures will be instigated within three days of construction completion.
d. All riparian plantings shall follow one or both of the following direction documents: Regional FS letter to Units, Use of Native and Nonnative Plants on National Forests and Grasslands, May 2006 (Final Draft), and BLM Instruction Memorandum No. OR-2001-014, Policy on the Use of Native Species Plant Materials.
e. When necessary, loosen compacted areas, such as access roads, stream crossings, staging, and stockpile areas.

vii. **Wildlife General CMs** – For wildlife CMs common to all activities, see PDCs for Terrestrial Species section, below.

Project Activity Category Descriptions

1. Large Wood, Boulder, and Gravel Placement (includes tree removal for large wood projects).

a) Description – Place large wood (LW) and/or boulders in stream channels and adjacent floodplains to increase channel stability, rearing habitat, pool formation, spawning gravel deposition, channel complexity, hiding cover, low velocity areas, and floodplain function. In areas where natural gravel supplies are low (immediately below reservoirs, for instance), gravel placement may be used to improve spawning habitat. Full channel-spanning porous boulder weirs (boulder weirs) can only be installed in streams with a legacy of splash damming, stream cleaning, or other activities that have resulted in highly uniform, incised, bedrock-dominated channels with few boulders or woody debris. Live and or dead trees may be removed to provide LW for restoration projects, under special conditions described herein. Large wood, boulder, and gravel projects would include the use of log trucks and dump trucks for transport and excavator-type machinery, spyders, cable yarders, draft horses, or helicopters for placement

b) Design Criteria

i. **Large Wood , Boulder, and Gravel Placement**

iv. If other aquatic restoration activities included in this BO are used as complementary actions, follow the associated PDCs and CMs.

c) Conservation Measures – No additional CMs are required.

d) Excluded Activities – The following activities are not included in this BO:

- Any structures that include the use of gabion baskets, sheet pile, concrete, articulated concrete block, and/or cable anchors;
- Straight weirs, which disperse flows and can cause channel widening and thus structure "flanking" (erosion around the ends of the structure).

4. Bank Restoration

a) Description – Restore eroding stream banks to reduce chronic bank erosion, improve water quality, restore natural channel cross-sections, expand floodplain area, promote growth of riparian vegetation and create undercut banks for adult and juvenile fish hiding cover. Projects will not significantly restrict the channel migration zone and ability of the channel to form and maintain habitat. Construction would involve use of heavy equipment, such as excavators, spyders, backhoes, and dump trucks.

b) Design Criteria

i. Work will focus on eroding stream banks, primarily the outside edge of meander bends.

ii. Limit bank restoration projects to those sites where existing channel conditions are at or near reference channel conditions—radius of curvature, etc. To the extent possible, use bank stabilizing materials that would naturally occur at that site (such as LW, woody and herbaceous plantings, native sedge/rush mats, and native rock).

iii. Banks may be reshaped and sloped where the objective is to reduce blank slope angle to provide more favorable planting surfaces. Such work should not change the location of the bank toe.

iv. Jute matting or other biodegradable material can be used with plantings to help prevent erosion of affected banks.

v. If other aquatic restoration activities included in this BO are used as complementary actions, follow the associated PDCs and CMs.

c) Conservation Measures – No additional CMs are required.

d) Excluded Activities – The following activities are not included in this BO:

- Use of dikes, groins, buried groins, drop structures, porous weirs, weirs, riprap, rock toes, and similar structures to stabilize streambanks.

5. Fish Passage Culvert and Bridge Replacement and Removal Projects

a) Description – Remove or replace existing road-stream crossing structures—culverts and bridges—that restrict fish passage with stream simulation structures to restore up and downstream passage for all life stages of native fish. Replacements of existing road-stream crossing structures that do not restrict fish passage are permissible. Construction would involve use of heavy equipment, such as excavators, cranes, backhoes, front-end loaders, dump trucks, bull dozers, and on occasion pile-drivers and helicopters.

b) Design Criteria

i. Fish passage projects should be designed by an experienced engineer with design input from an experienced fisheries biologist and hydrologist. Such personnel shall oversee or review the project during construction to ensure that PDCs and CMs are being properly implemented.

ii. Forest Service Design Assistance Teams or the BLM and Coquille Tribe equivalent will provide design review for projects that exceed $100,000 in cost or will result in structures that are greater than 20' in width.
iii. Assess sites for a potential to headcut below the natural stream gradient. Along with field surveys, refer to Appendix 1 for a guide to assess headcut potential. Projects that lead to headcutting below the natural stream gradient are excluded from this consultation.
iv. Design Standards
    a. Structure Type – Structure types include closed-bottomed culverts, open-bottomed arch culverts, and bridges. Structure material must be concrete or metal.
    b. Structure Width – The structure width shall never be less than the bankfull channel width. (The stream width inside the culvert or between bridge footings shall be equal to or greater than the bankfull width). The minimum structure width and height for a closed bottom culvert shall be 6 feet to allow manual placement of stream simulation material. Structures must accommodate a 100-year flood flow while maintaining sediment continuity (similar particle size distribution) within the culvert as compared to the upstream and downstream reaches. To meet this requirement, unconfined channel types (Rosgen C, E, and B channel types, Rosgen 1996) may require structures wider than bankfull and/or the addition of flood relief culverts or other comparable flood relief methods.
    c. When possible, flood relief culverts will be designed to restore and maintain access to off-channel holding areas for juvenile and adult fish. Therefore, existing floodplain channels should be the first priority for location of flood relief culverts. Flood relief culverts should be installed in a manner that match floodplain gradient and do not lead to scour at the outlet.
    d. Channel Slope – The structure slope shall approximate the average channel gradient of the natural stream up and downstream of the structure. The maximum slope for closed-bottomed culverts shall not exceed 6% because of difficulties in retaining substrate in the culvert at higher gradients. Open-bottom arches can be placed in channel gradients that exceed 6%.
    e. Embedment – If a closed culvert is used, the bottom of the culvert shall be buried into the streambed not less than 20% and not more than 50% of the culvert height. For open-bottomed arches and bridges, the footings or foundation shall be designed to be stable at the largest anticipated scour depth. Substrate and habitat patterns within the culvert should mimic stream patterns that naturally occur above and below the culvert. Coarser material may be incorporated to create velocity breaks during high flows, thereby improving fish passage, and to provide substrate stability.
    f. Rip Rap – The use of riprap is permissible above bankfull height to protect the inlet or outlet of new culverts or open-bottomed arches. If the use of riprap is required for culvert stability, then an additional analysis may be required to ensure that the structure is not undersized. Riprap may only be placed below bankfull height when necessary for protection of abutments and pilings for bridges. However, the amount and placement of riprap around the abutments and/or pilings should not constrict the bankfull flow.
    g. Grade Control Structures – Grade control structures are permitted to prevent headcutting above or below the culvert or bridge. Grade control typically consists

of boulder structures that are keyed into the banks, span the channel, and are buried in the substrate.

h. Road Dips – Where applicable, incorporate road dips into stream crossing design, to ensure catastrophic flood events will transport overflow back into the stream channel instead of onto the road bed.

v. Structures containing concrete must be cured or dried before they come into contact with stream flow.

vi. In cases of structure removal or when removing an existing structure and replacing it with a bridge, restore the stream channel and reconnect the floodplain at the site using applicable restoration categories.

vii. When removing woody debris from the road-crossing inlet, place the debris downstream of the road crossing.

viii. Monitor structures after high flow events, which occur during the first fall/winter/spring after project completion. Assess the following parameters: headcutting below natural stream gradient, substrate embeddedness in the culvert, scour at the culvert outlet, and erosion from sites associated with project construction. If necessary, apply remedial actions (using PDCs and CMs) if projects do not meet the intended goals.

ix. If other aquatic restoration activities included in this BO are used as complementary actions, follow the associated PDCs and CMs.

c) Conservation Measures – Along with the General CMs applicable to all activity categories, the following CMs will be used to minimize sediment and turbidity and effects of fish handling/transport.

i. **Isolate Construction Area and Remove Fish from Project Area**

a. All fish capture, removal, and handling activities shall be conducted by an experienced fisheries biologist or technician.

b. Isolate Capture Area – Install block nets at up and downstream locations and leave in a secured position to exclude fish from entering the project area. Leave nets secured to the stream channel bed and banks until fish capture and transport activities are complete. If block nets or traps remain in place more than one day, monitor the nets and or traps at least on a daily basis to ensure they are secured to the banks and free of organic accumulation and to minimize fish predation in the trap.

c. Fish Capture Alternatives

1. Collect fish by hand or dip nets, as the area is slowly dewatered.
2. Seining – Use seine with mesh of such a size to ensure entrapment of the residing ESA-listed fish.
3. Minnow traps – Traps will be left in place overnight and in conjunction with seining.
4. Electrofishing – Prior to dewatering, use electrofishing only where other means of fish capture may not be feasible or effective. The protocol for electrofishing includes the following:
5. If fish are observed spawning during the in-water work period, electrofishing shall not be conducted in the vicinity of spawning adult fish or active redds.
6. Only Direct Current (DC) or Pulsed Direct Current (PDC) shall be used.
7. Conductivity <100 use voltage ranges from 900 to 1100. Conductivity from 100 to 300 then use voltage ranges from 500 to 800. Conductivity greater than 300 then use voltage to 400.

8. Begin electrofishing with minimum pulse width and recommended voltage and then gradually increase to the point where fish are immobilized and captured. Turn off current once fish are immobilized.
9. Do not allow fish to come into contact with anode. Do not electrofish an area for an extended period of time. Remove fish immediately from water and handle as described below. Dark bands on the fish indicate injury, suggesting a reduction in voltage and pulse width and longer recovery time.

ii. **Handling and Release** –Fish must be handled with extreme care and kept in water the maximum extent possible during transfer procedures. A healthy environment for the stressed fish shall be provided—large buckets (five-gallon minimum to prevent overcrowding) and minimal handling of fish. Place large fish in buckets separate from smaller prey-sized fish. Monitor water temperature in buckets and well-being of captured fish. As rapidly as possible (especially for temperature-sensitive bull trout), but after fish have recovered, release fish upstream of the isolated reach in a pool or area that provides cover and flow refuge. Document all fish injuries or mortalities and include in annual report.

iii. **Dewater Construction Site** –Upstream of the isolated construction area, divert flow around the construction site with a coffer dam (built with non-erosive materials) and an associated pump or a by-pass culvert. Diversions constructed with material mined from the streambed or floodplain is not permitted. Small amounts of instream material can be moved to help seal and secure diversion structures. Pumps must have fish screens and be operated in accordance with NMFS fish screen criteria *(*NMFS 1995). Dissipate flow energy at the bypass outflow to prevent damage to riparian vegetation or stream channel. If diversion allows for downstream fish passage (i.e., is not screened), place diversion outlet in a location to promote safe reentry of fish into the stream channel, preferably into pool habitat with cover. When necessary, pump seepage water from the de-watered work area to a temporary storage and treatment site or into upland areas and allow water to filter through vegetation prior to reentering the stream channel.

iv. **Stream Re-watering** – Upon project completion, slowly re-water the construction site to prevent loss of surface water downstream as the construction site streambed absorbs water and to prevent a sudden increase in stream turbidity. Monitor downstream during re-watering to prevent stranding of aquatic organisms below the construction site.

d) Excluded Activities – The following activities are not included in this BO:

- Use of treated wood for replacement bridges;
- Bridge piers and abutments will not be constructed in the bankfull width;
- The hydraulic method will not be used (e.g., culverts with baffles or weirs)
- Projects that permit exotic fish into isolated bull trout populations or other native fish populations.

6. Irrigation Screen Installation and Replacement (includes weir removal)

a) Description – This action is for existing diversions only and is focused on installing, replacing, or upgrading off-channel screens to improve fish passage or prevent fish entrapment in irrigation canals. This action also includes the removal of non-needed existing diversions that are less than six feet high or impound less than 15 acre feet of water. Construction would involve use of heavy equipment, such as excavators, backhoes, front-end loaders, dump trucks, and bull dozers.

b) Design Criteria

i. All fish screens must be sized to match the landowner's documented or estimated historic water use and legal water right(s) which ever is less.

ii. Irrigation diversion intake and return points must be designed (to the greatest degree possible) to prevent all native fish life stages from swimming or being entrained into the irrigation system.

iii. Screens, including screens installed in temporary and permanent pump intakes, must meet NMFS fish screen criteria (NMFS 1995). NMFS fish screen criteria applies to federally listed salmonid species under their jurisdiction as well as bull trout, Oregon chub, shortnose sucker, Lahontan cutthroat trout, Lost River sucker, and Warner sucker under Service jurisdiction.

iv. Size of bypass structure should be big enough to pass kelt steelhead and migratory bull trout back into the stream.

v. Abandoned ditches and other similar structures will be plugged or backfilled, as appropriate, to prevent fish from swimming or being entrained into them.

vi. When making improvements to pressurized irrigation systems, install a totalizing flow meter capable of measuring rate and duty of water use. For non-pressurized systems, install a staff gage or other measuring device capable of measuring instantaneous rate of water flow.

vii. For diversion removal projects, use CMs under Activity #5 – Fish Passage Culvert and Bridge Projects.

viii. If other aquatic restoration activities included in this BO are used as complementary actions, follow the associated PDCs and CMs.

c) Conservation Measures – none.

d) Excluded Activities - The following activities are not included in this BO:

- Effects from the issuance of Action Agency permit to divert water from Federal lands;
- Large diversions/structures which have substantial accumulations of sediment that may be released and adversely affect downstream fish, critical and or essential fish habitat;
- Consolidation, improvement, and modification of diversions.

7. In-channel Nutrient Supplementation

a) Description – This activity includes the placement of salmon carcasses, carcass analogs (processed fish cakes), or inorganic fertilizers in stream channels to help return stream nutrient levels back to historic levels. Large trucks may be used to transport nutrients. Application and distribution of nutrients throughout a stream corridor can occur manually from bridges or stream banks, by boat, or by helicopter.

b) Design Criteria

i. In Oregon, projects are permitted through ODEQ. Use carcasses from the treated watershed or those that are certified disease free by an ODFW pathologist.

ii. In Washington, follow WDFW's *Protocols and Guidelines for Distributing Salmonid Carcasses, Salmon Carcass Analogs, and Delayed Release Fertilizers to Enhance Stream Productivity in Washington State, 2004*.

iii. Ensure that the relevant streams have the capacity to capture and store placed carcasses.

iv. Carcasses should be of species native to the watershed and placed during the normal migration and spawning times, as would naturally occur in the watershed.

v. Do not supplement nutrients in eutrophic or naturally oligotrophic systems.

iv. Tree and shrub species as well as sedge and rush mats to be used as transplant material shall come from outside the bankfull width, typically in abandoned flood plains, and where such plants are abundant.
v. Sedge and rush mats should be sized as to prevent their movement during high flow events.
vi. Concentrate plantings above the bankfull elevation.
vii. If other aquatic restoration activities included in this BO are used as complementary actions, follow the associated PDCs and CMs.

c) Conservation Measures – No additional CMs are required.

d) Excluded Activities – None

17. Road Treatments

a) Description – This activity includes road treatments, from simple closures to more complex road obliteration and removal, with an overall goal of restoring hydrologic functions. This category also includes stormproofing roads intended to remain open, thereby hydrologically disconnecting such roads from watershed streams. Associated benefits include the following: eliminate or reduce erosion and mass-wasting hazards associated with roads; eliminate or reduce human access and associated impacts to aquatic systems; enhancing natural hydrologic processes through reduction of drainage network. Actions such as bridge and culvert removal, removal of asphalt and gravel, installing drainage culverts, constructing road dips, subsoiling or ripping of road surfaces, outsloping, waterbarring, fill removal, sidecast pullback, re-vegetating with native species and placement of LW and/or boulders are included. Roadway barricading to exclude vehicular traffic is covered only if the overall road remediation project substantively addresses restoration of hydrologic function. For culvert removals on closed roads, limited cutting or removal of vegetation on the closed road-bed to access the culvert site may be required. Construction would involve use of heavy equipment, such as excavators, backhoes, front-end loaders, dump trucks, and bull dozers.

b) Design Criteria

i. For road removal projects within riparian areas, recontour the affected area to mimic natural floodplain contours and gradient to the greatest degree possible.
ii. When obliterating or removing segments immediately adjacent to the stream, consider using sediment control barriers between the project and the stream.
iii. Drainage features used for stormproofing and treatment projects should be spaced as to hydrologically disconnect road surface runoff from stream channels.
iv. Dispose of slide and waste material in stable sites out of the flood prone area. Waste material other than hardened surface material (asphalt, concrete, etc) may be used to restore natural or near-natural contours.
v. Minimize disturbance of existing vegetation in ditches and at stream crossings to the greatest extent possible.
vi. Conduct activities during dry-field conditions—low to moderate soil moisture levels
vii. When removing a culvert from a first or second order, non-fishing bearing stream, project specialists shall determine if culvert removal should follow CMs under activity #5 – Fish Passage Culvert and Bridge Projects. Culvert removal on fish bearing streams shall adhere to the CMs under activity #5 – Fish Passage Culvert and Bridge Projects.
viii. For culvert removal projects, restore natural drainage patterns and when possible promote passage of all fish species and life stages present in the area. Evaluate

channel incision risk and construct in-channel grade control structures when necessary.

ix. If other aquatic restoration activities included in this BO are used as complementary actions, follow the associated PDCs and CMs.

c) Conservation Measures – No additional CMs are required.

d) Excluded Activities – The following activities are not included in this BO:

- New road construction;
- Routine road maintenance.

18. Removal of Legacy Structures

a) Description – Remove LW, boulders, rock gabions, and other in-channel structures that were constructed to improve fish habitat but were installed in a manner that was and continues to be inappropriate for the given stream type. Examples of such structures, which were typically installed in the 1980's and early 1990's, include boulder configurations in meadow streams, stair-step perpendicular log weirs, and rock gabions. These legacy structures typically resulted in widened stream channels, increased width/depth ratios, decreased sinuosity, and increased stream exposure to solar radiation. Removal of legacy structures would include the use of excavator-type machinery, spyders, backhoes, and dump trucks.

b) Design Criteria

i. If the structure being removed contains material (i.e., LW, boulders, etc) not typically found within the stream or floodplain at that site, remove material from the 100-year floodplain.

ii. If the structure being removed contains material (i.e., LW, boulders, etc) that is typically found within the stream or floodplain at that site, the material can be reused to implement habitat improvements described under Large Wood, Boulder, and Gravel Placement activity category in this BO. Any such project must follow PDCs for Large Wood, Boulder, and Gravel Placement activity category within this BO.

iii. If the structure being removed is keyed into the bank, fill in "key" holes with native materials as to restore contours of stream bank and floodplain. Compact the fill material adequately to prevent washing out of the soil during over bank flooding. Do not mine material from the stream channel to fill in "key" holes.

iv. When removal of buried (keyed) structures may result in significant disruption to riparian vegetation and/or the floodplain, consider using a chainsaw to extract the portion of log within the channel and leaving the buried sections within the streambank.

v. Assess sites for a potential to headcut below the natural stream gradient. Along with field surveys, refer to Appendix 1 for a guide to assess headcut potential.

vi. If headcutting and channel incision are likely to occur due to structure removal, additional measures must be taken to reduce these impacts (see grade control options described under Headcut Stabilization activity category).

vii. If the structure is being removed because it has caused an over-widening of the channel, consider implementing other BO restoration categories to decrease the width to depth ratio of the stream at that location to a level commensurate with upstream and downstream (within the same channel type).

viii. If other aquatic restoration activities included in this BO are used as complementary actions, follow the associated PDCs and CMs.

c) Conservation Measures – No additional CMs are required.

d) Excluded Activities – None

19. Survey and Monitoring (includes fisheries, hydrology, geomorphology wildlife, botany, and cultural surveys in support of BO activities)

a) Description. Includes assessment and monitoring projects that are specifically associated with planning, implementation, and monitoring of aquatic restoration projects covered by this BO. Such support projects may include surveys to document the following aquatic and riparian attributes: fish habitat, hydrology, channel geomorphology, water quality, fish spawning, fish presence, macro invertebrates, riparian vegetation, wildlife, and cultural resources (including excavating test pits <1 m^2 in size). This also includes presence/absence surveys for listed terrestrial wildlife, bird, and plant species in the project area.

b) Design Criteria:

i. Training personnel in survey methods that prevent or minimize disturbance of fish. Contract specifications should include these measures where appropriate.
ii. Avoid impacts to fish redds. When possible, avoid sampling during spawning periods.
iii. Coordinate with other local agencies to prevent redundant surveys.
iv. Locate excavated material from cultural resource test pits away from stream channels. Replace all material in test pits when survey is completed and stabilize the surface.

c) Conservation Measures – No additional CMs are required.

d) Excluded Activities – The following activities are not included in this BO:

- Surveys covered with permits issued under Section 10(a)(1)(A) of the ESA.

Project Design Criteria and Conservation Measures for Listed Terrestrial Species and their Designated Critical Habitat

This section provides general and species-specific PDCs and CMs that ensure covered actions will not adversely affect listed species and their critical habitat. The only exception, as discussed below, is the limited number of actions that may disturb nesting BEs NSOs, and murrelets. This section also contains CMs to minimize potentially adverse disturbance effects to listed birds.

Appendix 2 provides species-specific (non-bird) PDCs and CMs that, when applied, will ensure aquatic habitat restoration actions are not likely to adversely affect listed terrestrial species and their critical habitats. Appendix 3 provides a Terrestrial Definitions Glossary, to ensure consistent interpretation of information in this BO.

1. The following PDCs apply to all listed terrestrial (i.e., bird, mammal, plant, and invertebrate) species for all programmatic activities:

a) Actions will not remove or reduce the overall function of suitable habitat for any listed terrestrial species.

b) Hazard tree removal will not result in LAA for listed birds. No BE nest trees may be removed, including hazard trees. Also, hazard tree removal will not adversely affect listed birds' critical habitat.

c) Actions must have the unit's botanist and wildlife biologist input in/analysis of the project design and their site-specific species assessment to proceed. This includes a plant survey and nest analysis (or survey as described below) if suitable habitat is known to occur within the project prior to project implementation.

d) Blasting activities are not part of the proposed action.

e) A unit wildlife biologist has the discretion to adjust disturbance and disruption distances, based on site-specific conditions. They may increase, but not decrease, disruption distances for NSOs and murrelets based on site-specific conditions.

f) Planning teams and contractors will observe the minimum disturbance (and disruption if applicable) distances for listed terrestrial species (see Tables 7-10). Work activities must occur further than the species-specific disturbance distances during the time frame specified to have NLAA determinations. Alternatively, activities that occur outside these time frames are considered NLAA actions. For species with a range of disturbance/disruption distances, refer to the CMs specific to that species. Also, refer to species-specific CMs to view other criteria needed to comply with NLAA determinations.

g) BEs may only be taken in the following covered administrative units: Deschutes NF, Fremont/Winema NF, Siuslaw NF, Lakeview BLM, and Medford BLM. These units had at least 10 active nests (i.e., 10 nests with documentation of nesting activity, even if the nest failed) in 2006. Only one BE may be taken per covered administrative unit per year or two BEs per covered administrative unit every other year, totaling no more than six BE per covered administrative unit over the life of the programmatic consultation.

Table 7. Disturbance distances and time periods when disturbance (and possibly disruption) may occur for terrestrial species. Generally, if distance/timing restrictions are not met, the action becomes LAA for consultation purposes (see additional guidance for NSOs, BEs, murrelets).

Species	**Disturbance Distance (in miles)**	**Time Period Applicable**
NSO (nesting)	0.25[1]	Mar 1 – July 15
BE (nesting)	0.25 or 0.5 line-of-sight, except 0.5 mi for helicopter use in OR, or 1 mi for pile driving in WA.	Jan 1 – Aug 31
BE (wintering)	0.25 or 0.5 line-of-sight, except 0.5 mi for helicopter use in OR, or 1 mi for pile driving in WA.	Nov 15 – Mar 15
Murrelet (nesting)	0.25[2]	Apr 1 – Aug 5 Or Aug 6-Sept 15 w/ 2-hr timing
Canada lynx (denning)	0.25	May 1 – Aug 31
Gray wolf (active dens/rendezvous sites)	1.5	Jan 1 – Dec 31
Grizzly bear (denning)	0.25	Oct 15 – May 15
Grizzly bear (early foraging habitat)	0.25	Mar 15 – July 15
Grizzly bear (late foraging habitat)	0.25 (actions >1 day)	July 16 – Nov 15
Woodland caribou	Recovery Area	Early winter
All Plants	0.25[3]	Jan 1 – Dec 31

[1] Actions are still NLAA if you conduct them outside the activity-specific disruption distances in Table 8.
[2] Actions are still NLAA if you conduct them outside the activity-specific disruption distances in Table 10.
[3]If proposed project is within 0.25 mile of a listed plant, measures must be taken to minimize threats to NE or NLAA for the species to be covered by this programmatic BO.

2. Birds – The PDCs and CMs described in this section are designed to avoid adverse effects to listed birds and their critical habitat. They are also designed to minimize the potentially adverse disturbance effects of a limited number of actions that may disturb BEs, NSOs, and murrelets per year.

Action Agencies will avoid and/or minimize adverse effects to listed birds changing project location and/or timing when actions could potentially disrupt an active BE, murrelet, or NSO nest or BE communal roost. Most actions will occur further from active nests (or unsurveyed, suitable murrelet or NSO habitat) than the applicable disturbance/ disruption distance during the critical nesting period (see Tables 8-10). The only exception is the limited number of actions that may disturb BEs, NSOs, and murrelets when they are implemented within the disruption distance of an active nest or unsurveyed, suitable NSO or murrelet habitat during their breeding season. Action agencies may disturb up to five murrelets and three NSOs per administrative unit annually. Five units (Deschutes NF, Fremont/Winema NF, Siuslaw NF, Lakeview BLM, and Medford BLM) may disturb one BE eagle annually, [or, for nesting BEs, two per covered unit for three years, totaling no more than six per covered administrative unit over the life of this programmatic consultation, and no more than two per covered unit in a given year].

a) The following PDCs and CMs apply to NSOs, BEs, and murrelets for all programmatic activities:

i. The proposed activities must have wildlife biologist input/analysis to proceed. After the unit wildlife biologist has determined that suitable habitat may occur in the project area, they will conduct a nest analysis.
   a. If the action occurs in suitable NSO or murrelet habitat, a protocol survey will be conducted to determine if habitat is occupied and, if occupied, the number of active nests. If a protocol survey is not conducted, Action Agencies will assume that suitable habitat is occupied.
   b. If actions are conducted in unsurveyed, suitable murrelet or NSO habitat, then Action Agencies will use Table 21 or Table 24 to determine how many NSOs or murrelets may be disturbed by an action. Since the Tables are conservative estimates, the Action Agencies may provide an alterative representation of anticipated take (described in number of NSOs or murrelets potentially taken). This analysis will be provided to Level 1 teams in the pre-notification process.
   c. Since BEs are easily detected, and often re-use nests and roosts, a site-specific survey will determine whether they are actively nesting or roosting within the action area. If a historic BE nest is not surveyed, then Action Agencies will assume the nest is occupied by an adult pair with two young. If there is a known communal roost within the action area, then Action Agencies will assume it is occupied with more than one BE (unless an appropriate site survey determines otherwise).
   d. The unit wildlife biologist will determine whether the active nest (or unsurveyed, suitable NSO or murrelet habitat) is within the species-specific disturbance distance of the project.

iii. Hazard tree removal will not result in LAA for listed birds. No BE nest trees may be removed, including hazard trees. Also, hazard tree removal will not adversely affect listed birds' critical habitat. Hazard trees that are also suitable NSO and murrelet nest trees may only be removed if there are sufficient alternative suitable NSO and murrelet nest trees within the same stand that the hazard tree is located.

iv. The proposed activities included in this document are consistent with the NWFP (USDA and USDI 1994a) and FS and BLM Land and Resource Management Plans as amended by the Record of Decision for Amendments to the Survey and Manage, Protection Buffer, and Other Mitigation Measures Standards and Guidelines, USDA Forest Service and USDI Bureau of Land Management (USDA and USDI 2001).
v. Disturbance distances are listed in Table 7, and disruption distances are listed in Tables 8-10. The unit wildlife biologist has the discretion to adjust NSO and murrelet disturbance distances, based on site-specific conditions. They may increase, but not decrease, disruption distances for NSOs and murrelets based on site-specific conditions.
vi. No hovering or lifting within 500 feet of the ground in occupied NSO or murrelet habitat during the nesting seasons by ICS Type I helicopters would occur as part of any proposed action addressed by this assessment. To be consistent with draft BE management guidelines (USFWS 2006b), there will be no helicopter activity within 1,000 feet of an active BE nest, unless the BE pair has demonstrated tolerance for such activity. If work is proposed within the 1,000-foot BE buffer, Action Agencies will provide documentation of the BE pair's tolerance via the Level 1 pre-project notification process. Effects to the BE pair will not exceed those anticipated for a typical BE pair when activities are conducted with a 1,000-foot buffer.
vii. Many individual aquatic habitat restoration activity categories include additional, activity category-specific listed bird PDCs (see "Project Activity Category Descriptions", above). Ensure all listed bird PDCs are incorporated into project design.

b) Northern spotted owl

i. **NSO1**: Projects will not occur between March1 – July 15 if there is an active NSO nest, known activity center, RPO (Reference Point Owl) and/or occupied [or presumed-occupied] habitat within the disruption/disturbance distance of the project area. Otherwise it would be LAA and either (i) delayed until July 15 (unless action involves Type I helicopters, which extend critical nesting window to September 30); (ii) delayed until it is determined that young are not present, or (iii) counted toward the limited number of LAA projects covered under this programmatic.
ii. **NSO2**: The unit wildlife biologist may extend the restricted season based on site-specific information (such as a late or recycle nesting attempt).
iii. **NSO3**: No suitable, dispersal, or critical NSO habitat will be removed or downgraded. All NSO habitat will be maintained.
iv. **NSO4**: NSO disturbance/disruption distances applicable to the equipment types proposed for aquatic restoration activities are provided in Table 8 (see Table 22 for NLAA and LAA distances).

Table 8. Northern spotted owl critical nesting period disruption (LAA) distances.

Activity	**Critical nesting period-** *(Mar 1-July 15)*[1]
Type I Helicopter	0.25 mile (and 0.25 mile July 15- September 30)
Type II, III, and IV Helicopters	120 yards
Heavy Equipment	35 yards
Chainsaw	65 yards

Burning or Smoke	0.25 mile
Tree Climbing	35 yards
Fixed wing aircraft	120 yards
Pile driving	60 yards
[1] Type I helicopter disruption distance is 0.25 miles between Mar 1 and Sept 30.	

c) Northern Bald eagle

i. **BE1:** Work activities will not occur within 0.25 mile (400 m) or 0.5 mile (800m) line-of-sight from nests/roost during critical nesting or wintering periods of BE use, unless surveys demonstrate that the nest or roost is not being used. Otherwise it would be LAA and either delayed until the nesting or wintering season is finished or BEs are not present or counted toward the limited number of LAA projects covered under this programmatic (as applicable for the five administrative units that anticipated potential BE disturbance). The following PDC will minimize the amount of take for LAA projects:

a. Prescribed burns will not be conducted within 0.25 miles of an active nest if winds are blowing smoke toward the active nest.
b. If activities will occur throughout an entire day in an area where BE foraging is limited specifically to the action area, then work will begin two hours after sunrise and will cease two hours before sunset to enable some BE foraging to occur.
c. Since BEs typically have one to few flight paths to key foraging areas, helicopter activities will avoid, whenever feasible, crossing primary BE flight paths. Flight paths will be determined or estimated by the local administrative unit wildlife biologist.
d. To be consistent with prior (USFWS 1981) and draft (USFWS 2006b) BE management guidelines, motorized activities (excluding helicopters) will not occur within 330 feet of an active BE nest if the activity is not visible from the nest, or 660 feet if activity is visible from an active nest. Non motorized, human activity that is visible or highly audible from the nest will not occur within 330 feet of an active nest. If work is proposed within the 330/660 foot buffers, then Action Agencies will provide documentation of the BE pair's tolerance via the Level 1 pre-project notification process. Effects to the BE pair will not exceed those anticipated for a typical pair when activities are conducted using the 330/660 foot buffers.

ii. **BE2:** All projects will comply with site-specific FS or BLM management plans for BE nest or roost sites.

iii. **BE3:** The function of suitable or occupied habitat and potential perches will not be removed or reduced.

iv. **BE4:** Table 9 shows BE disturbance distances that are applicable to programmatic aquatic restoration activities.

Table 9. Disruption (LAA) distances for BE breeding and winter roosting periods.

Activity	**Critical Nesting** *(Jan 1 – Aug 31)*	**Wintering** *(Nov 15 – Mar 15)* Occupied communal roost sites & key foraging areas
Helicopter, Aircraft	0.5 mile (OR) 0.25 mile or 0.5 mile line-of-sight	0.5 mile (OR) 0.25 mile or 0.5 mile line-of-sight

	(WA)	(WA)
Pile driving	0.25 mile or 0.5 mile line-of-sight (OR) 1 mile (WA)	0.25 mile or 0.5 mile line-of-sight (OR) 1 mile (WA)
All other Activities	0.25 mile or 0.5 mile line-of-sight	0.25 mile or 0.5 mile line-of-sight

d) Marbled Murrelet

i. **MM1:** Projects will not occur within the applicable disruption and disturbance distances for murrelets within their critical nesting period (Table 10), unless a protocol survey determines murrelets are not present. Otherwise the project would be LAA and either delayed until August 6 (with 2-hr timing restrictions) or until it is determined that young are not present or counted toward the limited number of LAA projects covered under this programmatic.

ii. **MM2:** All projects, even those with LAA determinations for murrelets, that are implemented between August 6 and September 15 would not begin until two hours after sunrise and would end two hours before sunset.

iii. **MM3:** No suitable, potential, or critical murrelet habitat is to be removed or downgraded (i.e., critical habitat will be maintained).

iv. **MM4:** Garbage containing food and food trash generated by workers in project areas is secured or removed to minimize attraction of corvids, which have been identified as predators of murrelet eggs and young.

v. **MM5:** Table 10 shows murrelet disruption distances that are applicable to aquatic restoration activities (see Table 25 for NLAA and LAA distances).

Table 10. Murrelet critical nesting period disruption (LAA) distances

Activity	**Critical Nesting Period** Apr 1 – Aug 5	**Aug 6 –Sept 15** *w/ 2hr timing*
Chainsaws, Pile driving, Heavy Equipment, Tree Climbing and Excessive Human Presence	100 yards	0
Burning or Smoke	0.25 mile	0
Type I	0.25 mile	0.25 mile
Type II, III, and IV	120 yards	0
Fixed-wing aircraft	120 yards	0

STATUS OF THE SPECIES

Bull Trout

The coterminous United States population of the bull trout was listed as threatened on November 1, 1999 (USFWS 1999a). Critical habitat was designated on October 26, 2005 (USFWS 2005a), and includes a total of 3,828 miles of streams, 143,218 acres of lakes and reservoirs, and 985 miles of marine shoreline (see additional Critical Habitat information, below). The threatened bull trout generally occurs in the Klamath River Basin of south-central Oregon; in the Jarbidge River in Nevada; in the Willamette River Basin in Oregon; in Pacific Coast drainages of Washington, including Puget Sound; throughout major rivers in Idaho, Oregon, Washington, and