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:
2011/03268

June 22, 2012

Chris Worth
U.S. Forest Service
Forest Supervisor
Mount Hood National Forest
16400 Champion Way
Sandy, Oregon 97055-7248

Re: Endangered Species Act Section Concurrence Letter and Magnuson-Stevens Essential Fish Habitat Response for the Jazz Thin Timber Sale, Collawash River (5th field HUC: 1709001101), Mount Hood National Forest, Clackamas and Marion Counties, Oregon

Dear Mr. Worth:

On July 22, 2011, the National Marine Fisheries Service (NMFS) received a biological assessment and your request for a written concurrence that the Jazz Thin timber sale, proposed by the U.S. Forest Service (USFS) under the National Forest Management Act (16 U.S.C. 1600-1614), is not likely to adversely affect (NLAA) species listed as threatened or endangered under the Endangered Species Act (ESA), critical habitat designated under the ESA, or both. You also requested NMFS' concurrence that the proposed action would not adversely affect essential fish habitat (EFH) designated under the Magnuson-Steven Fishery Conservation and Management Act (MSA). On November 14, 2011, NMFS requested additional information. On February 23, 2012, NMFS received the additional information, and on April 11, 2012, NMFS received an amendment to the proposed project.

This response to your request was prepared by NMFS pursuant to the following authorities: section 7(a)(2) of the ESA and implementing regulations at 50 CFR 402, section 305(b) of the MSA and implementing regulations at 50 CFR 600.920, and agency guidance for preparation of letters of concurrence[1] and use of the ESA consultation process to complete EFH consultation.[2]

[1] Memorandum from D. Robert Lohn, Regional Administrator, to ESA consultation biologists (guidance on informal consultation and preparation of letters of concurrence) (January 30, 2006).
[2] Memorandum from William T. Hogarth, Acting Administrator for Fisheries, to Regional Administrators (national finding for use of Endangered Species Act section 7 consultation process to complete essential fish habitat consultations) (February 28, 2001).

Description of the Proposed Action

The USFS proposes to implement the Jazz Thin timber sale, using commercial thinning techniques, on approximately 1,588 acres in the Mount Hood National Forest in the Collawash River watershed of the Clackamas River (Figure 1).

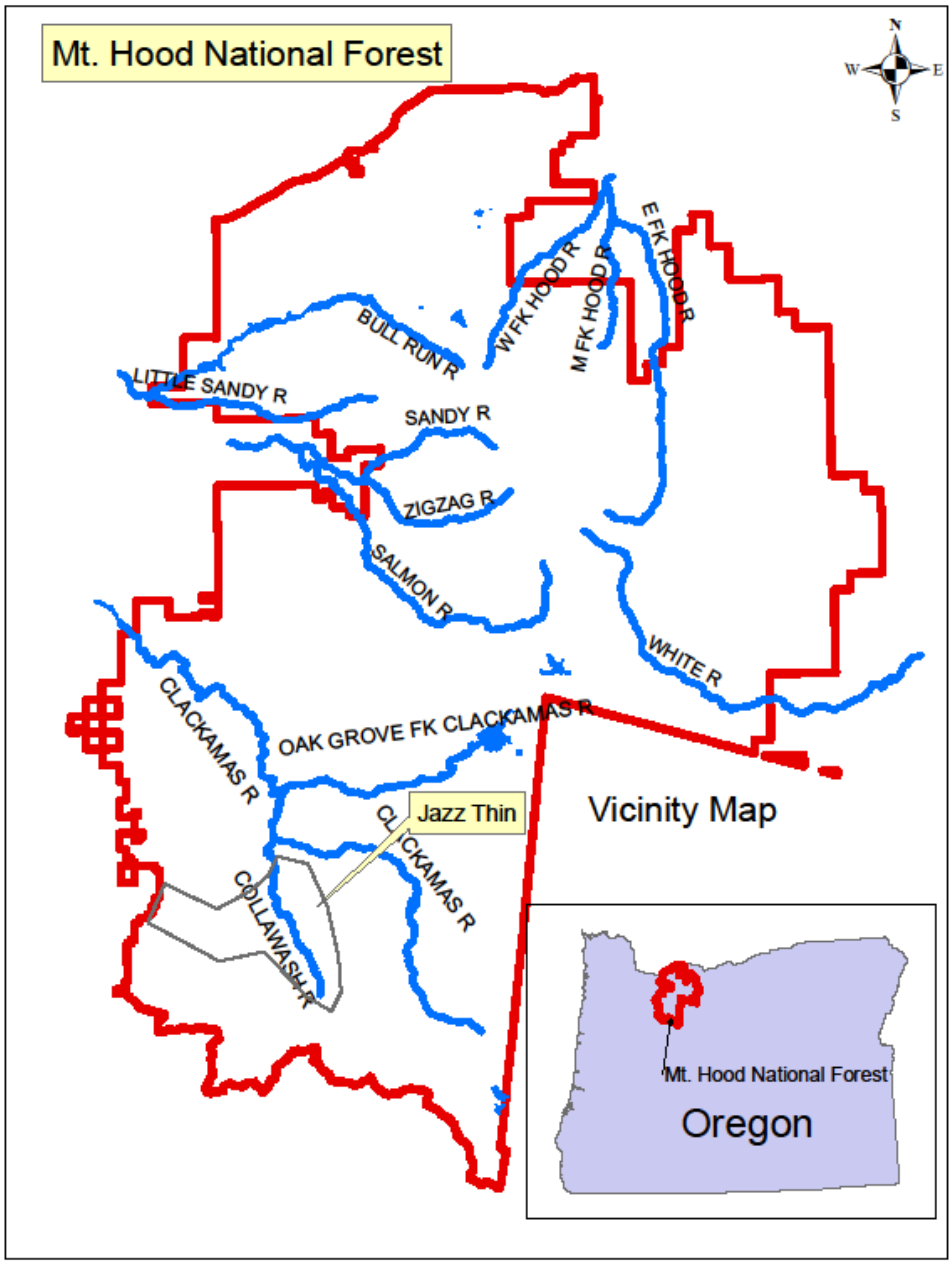


Figure 1. Vicinity map for the Jazz Thin timber sale in the Mount Hood National Forest in the Collawash watershed of the Clackamas River.

Trees in the project area are between 37 and 46 years old and occur in various land allocations as described in the Northwest Forest Plan (NWFP), including matrix, late-successional reserves, and the dry, upland portion of riparian reserves.[3]

The proposed action includes five project elements which are summarized below and described in detail in the BA:

1. Timber felling
2. Timber yarding
3. Timber and rock hauling
4. Road and landing work
5. Fuels treatment

Timber Felling. The USFS proposes to commercially thin approximately 1,588 acres of 37 to 46 year old stands, including 583 acres in riparian reserves (Table 1). The estimated average height of the tallest trees in the stands is 100 feet. Listed fish habitat[4] (LFH) occurs as near as approximately 300 feet downstream from the harvest area. The site potential tree height (SPTH) is 180 feet based on Douglas-fir trees.

Table 1. General information regarding the proposed thinning units.

Acres Treated	RR Acres Treated	Stand Age (years old)	Tree Height (feet)	Quadratic Mean Tree Diameter (inches)	Distance to LFH (feet)
1,588	583	38-46	87-100	11.5-13.0	300-1,900

Within the riparian reserves, there will be a no-cut buffer. There are no units adjacent to LFH. Perennial streams within 1,000 feet of LFH will have a 100-foot no-cut buffer and intermittent streams within 1,000 feet of LFH will have a 50-foot no-cut buffer. Most perennial streams between 1,000 feet and 1 mile from LFH will have a 100-foot no-cut buffer; however, there are four units that will have a 60-foot no-cut buffer on the north side of the streams. All intermittent streams between 1,000 feet and 1 mile from LFH will have a 50-foot no-cut buffer. Perennial streams greater than 1 mile from LFH will have a 50-foot no-cut buffer and intermittent streams will have a 30-foot no-cut buffer. Table 2 provides the general buffer prescriptions as described above, with exception to the four units as described above. Table 3 provides the buffer prescriptions for perennial streams for the four units that will not have 100-foot no-cut buffers as described above.

[3] Riparian reserves are partially defined in the NWFP as the greater of: two site-potential trees or 300 feet slope distance for fish-bearing streams, one site-potential tree or 150 feet for perennial non fish-bearing streams, and one site-potential tree or 100 feet for seasonal or intermittent streams. See NWFP for full riparian reserves definition (USDA and BLM 1994).

[4] Listed fish habitat (LFH) is defined as any stream reach potentially occupied by a ESA-listed fish species or any stream reach designated as critical habitat

Table 2. Minimum no-cut buffers by stream type and proximity to LFH.

Within 1,000 feet of LFH	1,000 feet to 1 mile from LFH[1]	Greater than 1 mile from LFH
Perennial Streams: 100 feet	Perennial Streams: 100 feet	Perennial Streams: 50 feet
Intermittent Streams: 50 feet	Intermittent Streams: 50 feet	Intermittent Streams: 30 feet

[1] Four units will not maintain the minimum 100-foot no-cut buffer. See Table 3 for details.

Table 3. No-cut buffers for perennial streams between 1,000 feet and 1 mile of LFH on four units that will not have 100-foot no-cut buffers.

Unit	Buffer	Unit Details
20	60 feet	Stream runs east-west and unit is north of the stream.
40	60 feet	Stream runs east-west and unit is north of the stream.
72	Happy Creek: 100 feet Tributary: 60 feet	Two streams in unit and run east-west. The unit is south of Happy Creek and north of a smaller tributary.
74	100 feet on the south unit and 60 feet on the north unit	Stream runs east-west and unit is on north and south side of the stream.

The thinning prescription within riparian reserves will have an average conifer relative density (RD) value of 25 and a canopy cover near 50% (Table 4). In stands greater than 1 mile upstream from LFH, an RD value of at least 25 will be maintained within 100 feet of streams. An average canopy closure of 50% will be maintained within the secondary shade zone, as defined in the Total Maximum Daily Load Implementation Strategy[5].

Within the harvest areas, stands will be thinned from 268 to 86 trees per acre (Table 3).

The thinning prescription will also include the use of skips and gaps in harvest units. Skips are areas where no trees will be removed within a harvest unit and gaps are areas where a few trees (1 to 6 trees remaining) will be retained. Skips may be placed where there are special features such as clumps of minor species of trees, clumps of down logs, key snags, wet areas, or locations of rare or uncommon species. Gaps (or patch cuts) from 1/10 to 1/4 acre in size will be created within riparian reserves. The distance separating gaps and patch cuts from LFH will be greater than 180 feet. The distance separating patch cuts from all other streams will be at least 100 feet.

[5] USDA Forest Service and USDI Bureau of Land Management. 2005. Northwest Forest Plan Temperature Implementation Strategies, Pacific Northwest. Final. September 9. 54 p.

Table 4. Pre- and post-harvest stand data.

Canopy Closure		Trees Per Acre		Relative Density	
Pre	**Post**	**Pre**	**Post**	**Pre**	**Post**
64-72	41-50	268	86	62	25

Timber Yarding. Timber yarding systems will include ground (427 acres), skyline (952 acres), and helicopter (209 acres) methods.

All ground-based tractor operations will take place on slopes averaging less than 30% to avoid the risk of damage to soil and water resources. However, mechanical fellers will be permitted on slopes up to 40% if operated on a layer of slash. No operation of ground-based yarding equipment will be permitted between November 1 and May 31 to reduce the risk of soil compaction and erosion. This restriction may be waived if soils are dry or frozen or if operators switch to skyline or other non-ground-based systems. Mechanical harvesters and forwarders will be required to work on a layer of residual slash placed in the harvester path prior to advancing the equipment.

Outside of the no-cut stream protection buffers, additional restrictions will apply for 50 feet beyond. Only low impact, minimal ground disturbing harvesting equipment such as mechanical harvesters or skyline systems (suspension yarding) will be allowed. Trees in this zone will be directionally felled away from the no-harvest buffer to minimize the disturbance to the forest floor.

Ground-based equipment will be required to use existing skid trails whenever feasible. Following harvest activities, ground cover will be provided on ground-based skid roads that have a potential for erosion problems. Water bars and cross ditches will be installed where needed to disperse water and control surface run-off.

All skyline yarding will incorporate one-end or full suspension. Full suspension will be used when yarding over a stream or wetland. Skyline yarding will not occur over LFH, and generally not within 1,000 feet of LFH. There are two units (82 and 156) where skyline corridors will be created as close as 620 feet of LFH. Yarding corridors will be approximately 15 feet wide and 100 to 200 feet apart. The maximum number of skyline corridors will be five per 1,000 feet of stream channel. There will be no seasonal restrictions on skyline yarding.

Timber and Rock Hauling. The USFS proposes to use 17 roads for hauling. As set out in Table 5, below, hauling will be permitted year round on most routes. On two, hauling routes will be restricted during the wet season (October 31 through June 1). There is one stream crossing over LFH on FS Road 6300. Wet-weather hauling will not be permitted over this stream. However, hauling year-round could occur on the paved section of the road. Hauling routes designated for year-round hauling will not be allowed when prolonged conditions exist (*e.g.*, during intense or prolonged rainfall), that may generate road-related runoff to streams. Hauling will be allowed on completely frozen or snow covered roads. However, hauling will not be allowed during periods of daily alternating freezing and thawing periods over a several day

period. Spot rocking and sediment traps will be employed to reduce potential sediment inputs to streams. See Table 5 for hauling information on aggregate-surfaces roads.

Table 5. Hauling route information for aggregate-surfaced roads.

Hauling Route	Wet Weather Hauling	Miles of Road	Number of Crossings			Road Length within 500 feet of LFH (feet)
			LFH		Non-LFH Perennial and Intermittent Streams within 1,000 feet of LFH	
			Bridges	Culverts		
6310	Y	9.7	0	0	0	1,600
6310240	Y	0.5	0	0	0	0
6311	Y	5.1	0	0	0	0
6311130	Y	0.7	0	0	0	0
6311150	Y	0.8	0	0	0	0
6300	N*	6.4	1	0	2	2,500
6300170	Y	0.5	0	0	0	0
6350	Y	4.0	0	0	0	0
6350160	Y	3.8	0	0	0	0
6360	Y	2.1	0	0	0	0
6370	Y	1.4	0	0	0	0
6380	N	1.9	0	0	8	5700
6320	Y	3.3	0	0	0	0
6330	Y	5.5	0	0	2	1200
6340	Y	7.9	0	0	1	2000
7010	Y	5.5	0	0	0	800
7015	Y	1.5	0	0	0	900

*No wet weather hauling over bridge at MP 5.7. Wet weather hauling is permitted on paved section.

Road and Landing Work. Road work consists of maintenance, reconstruction, construction, and decommissioning. Landing work consists of maintenance, reconstruction, and construction.

Road Maintenance. Approximately 61 miles of road will receive road maintenance (Table 8 in the BA). Road maintenance will consist of blading, ditch cleaning, and sediment trap cleaning. Soil disturbing road maintenance activities will be limited to the dry season (generally June 1 to October 31 dependent upon soil moisture conditions), unless the road segment has no hydrologic connection to a stream. Haul routes will 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. Sediment traps will be inspected weekly during the wet season and entrained soil will be removed when the traps have filled to 75% capacity. Disposal of these materials will be done in a stable site that is not hydrologically connected to any stream.

Road Construction. Approximately 0.40 miles of new roads will be constructed. The new roads will not cross any streams and will be prohibited within 200 feet of streams. The new roads are 2 miles overland distance from LFH and there is no hydrologic connection to LFH. New roads will be prohibited within 500 feet of LFH or within 200 feet of any other stream.

Road Reconstruction. The USFS proposes to construct 0.40 miles of new, temporary roads, reuse 3.63 miles of closed roads, and reconstruct 7.25 miles of decommissioned roads.[6] The majority of roads labeled as decommissioned were identified in the document titled "Clackamas roads decommissioning for habitat restoration, increment 2 environmental assessment" (Roads EA) (USDA 2011). Two of the roads (7010014 and 7010120) were mistakenly included in the EA.[7] Table 6 includes details about stream crossings and distances to LFH. Road reconstruction will consist of several temporary stream crossings, including a 36-inch culvert, installation of French drains with pit run rock, and log fords. Details about the temporary stream crossings are as follows:

- Unit 18: The existing temporary road was never decommissioned. The road crosses a seep with an existing log ford that has decayed. The proposed action is to construct a temporary crossing utilizing a log ford and pit run rock, and to remove log ford and rock and decommission the road when complete. The crossing is 5,300 feet from LFH.
- Unit 32: The existing temporary road was never decommissioned. The culvert failed at a crossing of a perennial stream. The proposed action is to construct a temporary crossing using a log ford and pit run rock. Log ford, rock, old culvert and decommission the road will be removed when the project is complete. The crossing is 6,800 feet from LFH.
- Unit 64: The existing road alignment from an old decommissioned road crosses a seep. The proposed action is to reconstruct as a temporary road, use a temporary French drain with pit run rock at seep, and remove rock and decommission the road when the project is complete. The crossing is 4,600 feet from LFH.
- Unit 112: The existing road alignment from an old decommissioned road crosses two seeps. At the seeps, the proposed action is to construct as a temporary road using temporary French drains with pit run rock. At the conclusion of logging in the unit, the rock will be removed and the road will be decommissioned. The crossings are 2,300 feet from LFH.
- Unit 118: The existing road alignment from the old decommissioned road crosses an intermittent stream. The proposed action is to reconstruct a temporary road, using the original alignment. The road will have a temporary crossing using a 36-inch culvert and pit run rock. At the conclusion, the culvert and rock will be removed and the road will be decommissioned. The crossing is 2,100 feet from LFH.
- Unit 132: The existing road alignment is from an old decommissioned road that crosses three small seeps. The proposed action is to reconstruct a temporary road. The contractor will use temporary French drains with pit run rock to cross seeps. The contractor will remove the rock and decommission the road when complete. The crossings are 9,100 feet from LFH.
- Unit 144: The proposed road alignment uses an old decommissioned road that crosses an intermittent stream, where the culvert was never removed. The proposed action is to reconstruct it as a temporary road. When complete, the contractor will remove the culvert and decommission the road. The crossing is 3,500 feet from LFH.

[6] May 8, 2012 email from James Roden, USFS, to Mischa Connine, NMFS, clarifying the current status of the roads that are labeled as decommissioned.

[7] April 24, 2012 email from Chuti Fiedler, USFS, to Mischa Connine, NMFS, providing corrected road information for the Clackamas Roads Decommissioning for Habitat Restoration, Increment 2 EA.

- Unit 146: The existing temporary road was never decommissioned. It crosses an intermittent stream that is causing erosion. The road drains into a flat area where the stream goes underground and is not hydrologically connected to LFH. The proposed action is to reconstruct a temporary road using pit run rock at the crossing. At the finish, the proposed action is to remove the pit run rock and decommission the road. The crossing is 7,800 feet from LFH.
- Unit 154: The existing temporary road alignment has a log crossing over a seep. The logs were never removed and are decayed. The proposed action is to reconstruct a temporary road. Included in the construction is a temporary crossing using a log ford and pit run rock. When complete, the contractor will remove the log ford and rock and decommission the road. The crossing is 1,100 feet from LFH.

Table 6. Road activities associated with the proposed action.

Unit	Temporary Road Reconstruction (miles)	New Temporary Road Construction (miles)	Distance to LFH (feet)	Stream crossings
12,46,88,128,138		0.40	2 miles	0
10-14	0.74		8,000	0
18	0.15		5,300	1
24,26,30,38	1.06		2,500	0
32,34	0.2		6,800	1
58	0.62		13,000	0
64,66	0.80		6,500	1
70	0.78		4,000	0
74	0.54		1,500	0
80	0.14		1500	0
84	0.05		2,600	0
86-108	1.04		6,000	0
126-132	0.95		9,100	1
110-112	0.74		2,300	1
118	0.70		2,100	1
137-140	1.01		2,000	0
144,158	0.65		3,500	1
146,148	0.44		6,800	1
154,156	0.39		1,100	1
Total	**11.00**	**0.40**		

***Road Decommissioning*.** Temporary roads would normally be constructed, used and decommissioned in the same operating season. If this is not possible, due to fire season restrictions or other unforeseen delays, the road will be winterized prior to the end of the normal operating season by out-sloping, water-barring, effectively blocking the entrance, seeding, mulching and fertilizing. Decommissioning will consist of ripping the road surface and storm proofing by installing water bars and barricading the roads to vehicular traffic. Road decommissioning activities will be restricted to the dry season (June 1 to October 31) unless unusually dry conditions permit activities outside this window. Temporary culverts, French drains and log fords, and fill material will be removed.

Landing Maintenance and Reconstruction. Existing landings will be used whenever possible, but subject to the following limitations. Existing landings will be used only where minimum reconstruction is needed (i.e. clearing vegetation generated from earlier entries, sloping for drainage, or surfacing for erosion control purposes). The use of existing landings within 200 feet of LFH will be prohibited. Existing landings located within riparian reserves will only be used if they are greater than 100 feet from any stream, perennial or ephemeral. If an existing landing within 200 feet of a non-LFH stream is used, erosion control measures, as described in Appendix 1 - PDC C6 in the BA, will be installed prior to use to prevent soil movement down slope from the landing. The landing will be rehabilitated (compacted soils fractured, seeded) after use. The size and number of landings will be kept to the minimum required to harvest the units. Landings planned for use outside of the normal operating season (June 1 to October 31) will be surfaced with aggregate material.

New Landing Construction. New landings will be prohibited within 500 feet of LFH or within 200 feet of any other stream. However, where new landings are needed for skyline or helicopter logging, trees will be yarded to roads with minimal expansion of the road prism. New temporary roads will use: (1) Bundled pipe, fabric and quarry rock; or (2) large diameter rock surrounded by small diameter gravel (*i.e.*, French drain) to create temporary stream crossings. The fill material will be removed when the road is decommissioned. The same Project Design Criteria (PDC) for existing landings apply for helicopter operations as mentioned above.

Fuels Treatment. There are no treatments proposed to reduce fire hazards. Material that accumulated at the landings will either be removed for firewood or burned. Slash piles will be less than 20 feet in diameter. There will be no seasonal restrictions for burning.

Project Design Criteria and Best Management Practices.

The following PDCs and best management practices were taken verbatim from the BA:

General Criteria.

A1. Projects must be consistent with the Standards and Guidelines found in the NWFP, and the agency's Best Management Practices for the protection of water quality.

A2. Timber harvest within riparian reserves must retain all legacy trees where safety permits (legacy trees include snags and live trees left from previous harvest that are typically larger than the remaining trees in the stand). Variable density thinning would be used in riparian reserves. Thinning would be primarily a "thin from below" to retain the dominant and/or co-dominant trees with the introduction of skips and gaps. Hazard or danger trees may be cut for safety reasons but must be left on site. Gaps are allowed in riparian reserves, only if each resulting opening is one acre or less in size.

A3. Streams within the project area must be protected with buffers as shown in Table 2 (above). Within these buffers, tree felling or yarding would generally not occur (with the exception of felling and yarding through skyline corridors, see specific PDC under Yarding). Stream buffers are measured using slope distance from the

edge of active channel (stream banks) on both sides of the stream. The minimum buffers would be expanded to include the following features, where recommended by the unit fisheries biologist:

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. Flood prone 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.

A4. 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 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.

A5. Limit ground disturbing activities, such as ground-based yarding, road construction/reconstruction/renovation, road decommissioning and landing construction, to the dry season (generally between June 1 and October 31, dependent upon soil moisture conditions) when the soil is more resistant to compaction and soil moisture is low. Operation outside this season would be evaluated by a soil scientist.

Tree Felling.

B1. Trees must not be felled within the stream protection buffer (Table 2, above) associated with any perennial stream (with the exception of hazard trees and trees within skyline yarding corridors; see below).

B2. Thinning within the riparian reserve on perennial streams will occur; however, approximately 50% canopy closure will remain in this treated zone.

B3. 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.

B4. Felling in riparian reserves must not create openings greater than ¼ acre in size.

B5. The distance separating a gap from LFH must be greater than the height of a site potential tree (180 feet). The distance separating a gap from all other streams must be at least 100 feet.

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 2, above). Require full or one-end

suspension when yarding in the remaining (outer) portion of the riparian reserve. Use 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 on slopes exceeding 35%, within riparian reserves.

C5. Do not use 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 mile of LFH, or
- c) within 100 feet of any stream channel;
- d) without the approval of the District or Forest fisheries biologist. Appropriate mitigation measures would be included to minimize erosion or sediment transport to streams.

C6. If an existing landing is less than the distances in C5, erosion control measures would be installed prior to use where appropriate to prevent soil movement downslope from the landing. Erosion control measures may include, but are not limited to, seasonal use restrictions (June 1 – October 31), straw bales around landing perimeter, and rock surfacing. The landing must be rehabilitated (compacted soils fractured, seeded) after use.

C7. Landings planned for use between November 1 to May 31, may need to be surfaced with aggregate material, dependent upon soil moisture conditions.

C8. Use existing landings and skid trails to the maximum extent possible. Within riparian reserves, the maximum amount of new soil compaction (defined as management-caused crowding of soil particles which causes a decrease in soil porosity of 50% or more, and an increase in soil density) caused by skid trails, corridors, and landings associated with activities in the proposed action must not be more than 10% of the harvest unit area.

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. Where feasible, harvesters would place logging slash in their path.

Temporary Road and Landing Construction and Reconstruction.

D1. Construction of new temporary roads or landings within 500 feet of LFH or within 200 feet of any other stream, would not occur.

D2. Emphasize the reuse of existing road alignments rather than the construction of new roads where appropriate. Where stream crossings are needed on existing alignments, they would be designed to minimize impacts to listed fish using techniques such as French drains, log fords and temporary culverts that would be used and removed the same season. The effects of each stream crossings, the distance to listed fish habitat and specific mitigation and design features would be addressed in the BA.

D3. New temporary road construction would generally occur on or near stable ridgetop locations, or on stable, relatively flat topography. Do not allow sidecast road construction when the hill slope exceeds 30%.

D4. Require an aggregate of rock or wood chips, or paved surface for all temporary roads or landings that will be used in the wet season (generally November 1 to May 31 dependent upon soil moisture conditions).

D5. Road construction must not increase the permanent stream drainage network (i.e. roads will be outsloped, or the outflow of new ditch relief culverts or other drainage structures will not drain to streams).

D6. Cross drains discharge to stable vegetated slopes where the outflow will quickly infiltrate the soil and not develop a channel to a stream.

D7. When constructing or reconstructing roads, the width of the compacted surface and ditch line must not be wider than 24 feet, except at landings.

D8. Implement erosion control measures to prevent offsite movement of disturbed or exposed soil associated with 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.

System Road Renovation, Reconstruction, and Maintenance.

E1. Limit scheduled soil disturbing renovation and reconstruction activities to the dry season, generally June 1 to October 31, depending upon soil moisture conditions, unless the road segment has no hydrologic connection.

E2. No 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 except at landings. Road work on existing roads that are wider than 24 feet must not result in an increase in the road width.

E4. 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.

E5. Existing desirable vegetation (*e.g.* grass) in ditchlines that discharge to streams must not be removed unless an effective sediment trap is installed and maintained until vegetation is reestablished. This does not restrict brush or tree cutting that leaves roots intact.

E6. Do not grade material removed from ditchlines onto the road surface where the road surfaces are within 200 feet of LFH or 100 feet of non-LFH. Material that must be removed from ditch lines within these distances would be removed and stored farther than 200 feet of LFH or 100 feet of non-LFH and where they cannot flow directly to a stream.

E7. 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.

E8. 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.

E9. Close and waterbar native surfaced roads prior to the wet season (generally November 1 to May 31 depending upon soil moisture conditions) and between operating seasons to prevent use and reduce erosion.

E10. At the termination of the sale, native surfaced roads must have drainage structures (*e.g.*, waterbars) installed, and the road closed to prevent use, if the road is hydrologically connected to any stream,

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

F1. Avoid haul routes that require travel over unstable road segments, if road use or failure would result in sediment delivery to any stream.

F2. 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.

Dry Season Haul.

F3. Timber transport on aggregate surfaced and natural surfaced roads is allowed during the dry season (generally June 1 to October 31, depending upon soil moisture conditions) 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 fully vegetated with grass, mowable ground cover 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.

Wet Season Haul.

F4. Timber transport is not allowed on native surfaced roads during the wet season (generally November 1 to May 31 depending upon soil moisture conditions).

F5. Timber transport is allowed during the wet season (generally November 1 to May 31 depending upon soil moisture conditions) 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. Road 6310 and 6340 are exempt because they are determined to not be hydrologically connected. These roads can be used in the wet season if approved by a district fish biologist, hydrologist or soil scientist and inclusion of erosion control measures such as silt fences, straw bales, matting, mulch, slash, water bars, grass seed (or other products), *etc*. This work will occur prior to the wet season.

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 would be employed to reduce potential sediment inputs to streams. Sediment traps would 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.

Action Area

For this consultation, the action area includes the Collawash River 5^{th-}field and 6^{th-}field watersheds (Table 7). This includes the areas directly and indirectly affected by the project. The Nohorn Creek, Lower Hot Springs Fork Collawash River, East Fork Collawash River, Happy Creek-Collawash River, Farm Creek-Collawash River 6th field watersheds contain the majority of the action area (Figure 2).

LCR coho salmon, LCR steelhead, and UWR Chinook salmon occur in the action area in the USGS 6^{th-} field hydrologic unit code (HUC) watersheds listed above. Designated critical habitat for LCR steelhead and UWR Chinook occur in the Collawash River, Hot Springs Fork Collawash River, and Upper Springs Fork Collawash River. LCR steelhead critical habitat also occurs in Lower Hot Springs Fork Collawash River, Thunder Creek, Fan Creek, Dickey Creek, Happy Creek, Elk Lake Creek, and East Fork Collawash River (see Figures 8-12 in the BA). Critical habitat has not been designated nor proposed for LCR coho salmon.

Table 7. Jazz Thin project watersheds.

HUC	HUC Scale	HUC Name
1709001101	5th field	Collawash River
170900110102	6th field	Nohorn Creek
170900110103	6th field	Lower Hot Springs Fork Collawash River
170900110105	6th field	East Fork Collawash River
170900110106	6th field	Happy Creek-Collawash River
170900110107	6th field	Farm Creek-Collawash River

The listing status, critical habitat, and protective regulations for LCR coho salmon, LCR steelhead, and UWR Chinook salmon are identified in Table 8.

Table 8. Federal Register notices for final rules that list threatened and endangered species, designate critical habitats, or apply protective regulations to listed species considered in this consultation. Listing status: 'T' means listed as threatened under the ESA.

Species	Listing Status	Critical Habitat	Protective Regulations
Chinook salmon (*Oncorhynchus tshawytscha*)			
Upper Willamette River	T 6/28/05; 70 FR 37160	9/02/05; 70 FR 52630	6/28/05; 70 FR 37160
Coho salmon (*O. kisutch*)			
Lower Columbia River	T 6/28/05; 70 FR 37160	Not applicable	6/28/05; 70 FR 37160
Steelhead (*O. mykiss*)			
Lower Columbia River	T 1/05/06; 71 FR 834	9/02/05; 70 FR 52630	6/28/05; 70 FR 37160

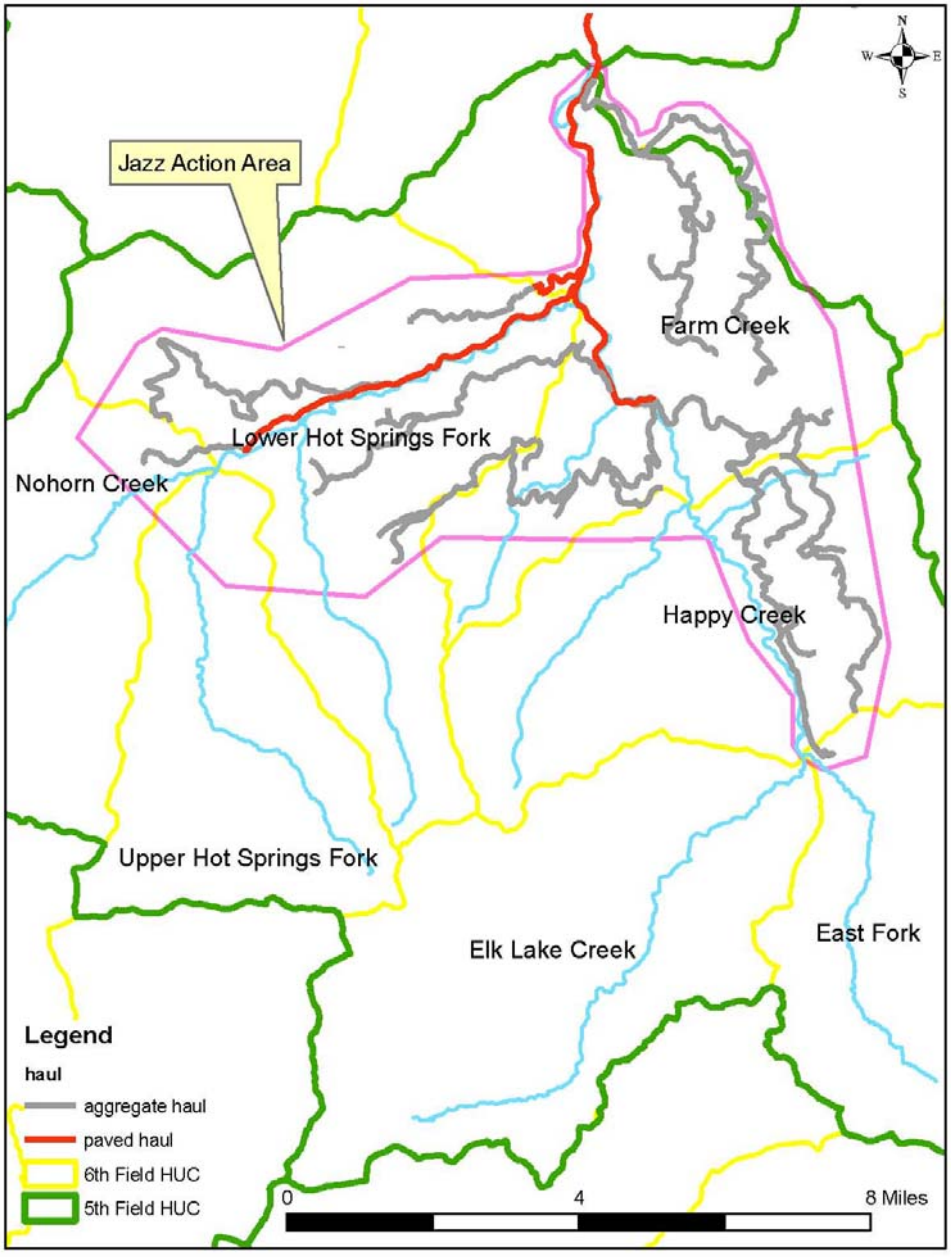


Figure 2. Action area for the proposed Jazz timber sale.

ENDANGERED SPECIES ACT

For purposes of the ESA, "effects of the action" means the direct and indirect effects of an action on the listed species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action (50 CFR 402.02). The applicable standard to find that a proposed action is NLAA listed species or critical habitat is that all of the effects of the action are expected to be discountable, insignificant, or completely beneficial.[8] Beneficial effects are contemporaneous positive effects without any adverse effects to the species. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur.

In 2004, NMFS worked with the U.S. Fish and Wildlife Service (USFWS), the Bureau of Land Management (BLM), and the USFS to revise the process for developing biological assessments for certain land management activities impacting ESA-listed salmonid species in the Northwest NWFP geographical area.[9] This approach was used here, in the BLM's BA, and has also been utilized as appropriate by NMFS in the consultation. In this regard, the constituent activities or elements of the proposed action (*e.g.*, timber harvest, road activities, timber hauling) were analyzed for potential effects on the habitat pathways of water quality, habitat access, habitat elements, channel conditions and dynamics, flow/hydrology, and watershed conditions. Each pathway has several relevant habitat indicators, such as temperature, physical barriers and large woody debris. In addition, where critical habitat has been designated, the primary constituent elements (PCEs) were analyzed in the same manner as the habitat indicators.

In applying the revised analytical approach, the agencies consider eight factors, derived largely from the 1998 joint NMFS and USFWS ESA Section 7 Consultation Handbook, when evaluating the effects of an action on habitat indicators and subsequently the effects on ESA-listed fish. These factors are proximity, probability, magnitude (severity and intensity), distribution, frequency, duration, timing, and nature. It is possible for agencies to complete their action analysis and reach an effect determination using only the first three factors. For example, if the action agency determines the species or critical habitat is not in proximity to the effects of a project element, then the element has a neutral effect on this indicator and no further analysis is needed. Likewise, if the outcome of assessment of the probability factor is entirely discountable, no further factor analysis is required for that element. If the outcome of the probability analysis is not discountable, the element should be assessed for the magnitude factor. Again, should the outcome of the assessment for magnitude result in insignificant effects, no further factor analysis is required for that PE.

The BA for the proposed action details and summarizes the effect of each project element on each habitat indicator using the relevant analysis factors. Element summaries are combined in indicator summaries to determine if the combined project effects result in an adverse effect to an indicator. In the BA, the USFS' analysis of the potential effects of each project element on the relevant habitat indicators led to a conclusion that the expected effects on LCR coho salmon,

---

[8] U.S. Fish and Wildlife Service and National Marine Fisheries Service. 1998. Endangered Species Act Consultation Handbook: Procedures for Conducting Section 7 Consultations and Conferences. March, 1998. Final. p. 3-12.

[9] Analytical Process for Developing Biological Assessments for Federal Actions Affecting Fish Within the Northwest Forest Plan Area (November 2004).

LCR steelhead, and UWR Chinook salmon, and designated critical habitat will be neutral, discountable, or insignificant. This conclusion was based on the distance of the project from LCR coho salmon, LCR steelhead, and UWR Chinook salmon, or their habitat (proximity), the likelihood that implementation of any of the project elements would affect LCR coho salmon, LCR steelhead, and UWR Chinook salmon (probability), or the severity and intensity of any affects that might occur (magnitude). Analysis of the proximity, probability and magnitude factors resulted in the USFS' conclusion that the proposed Jazz Thin timber sale is NLAA LCR coho salmon, LCR steelhead, and UWR Chinook salmon, and designated critical habitat. The other five evaluation factors were therefore not relevant to the effects determination for these proposed actions and were not addressed further in the BA.

The NMFS concludes that all effects of the proposed action are discountable and/or insignificant, and are therefore NLAA LCR coho salmon, LCR steelhead, and UWR Chinook salmon, and their designated critical habitat. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are extremely unlikely to occur. Based on best judgment, a person would not: be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur. These conclusions were reached for the following reasons:

1. No activity is proposed within any stream channel identified as containing ESA-listed fish or designated as their critical habitat. Direct take of individuals (*e.g.*, capture, collect) will not occur under the proposed action.

2. While some of the habitat indicators could be affected by the proposed project, those effects are expected to be discountable or insignificant, as described below:
   a. Physical barriers. One habitat indicator, physical barriers, will not be affected in LFH by any of the project elements in the proposed action.

   b. Temperature. Timber felling and yarding could affect stream temperature, but the effects would be insignificant in magnitude. While intermittent stream channels may influence water temperatures, their influence is minimal during most months of the year and is expected to be insignificant during the warmest months (*i.e.*, July through September), when extreme temperatures may affect Chinook salmon. NMFS assumes that perennial streams that continue to flow during the warmest period of the year are at the greatest risk of increased water temperatures.

      Stream shade correlates with the width of no-cut buffers in studies of clearcut logging (Brazier and Brown 1973, Steinblums 1977, Steinblums *et al.* 1984, Kiffney *et al.* 2003, Gomi *et al.* 2005, Fleuret 2006), but the relationship is quite variable, depending on site-specific factors such as stream size, channel aspect, topography, and forest structure and species composition. In some instances (such as narrow streams with dense, overhanging streamside vegetation, or stands on the north sides of streams with an east-west orientation), no-cut buffers as narrow as 30 feet adjacent to clearcuts can maintain stream shade (Brazier and Brown 1973). In Maine, a partial-removal buffer of 36 feet with adjacent clearcut showed minor, but not statistically significant increases of 1.0 –1.4°C, and a 76-foot

partial-removal buffer with adjacent clearcuts and control streams showed no changes following logging (Wilkerson *et al.* 2006). Wilkerson *et al.* (2006) reported that the small size of the temperature changes might be partially explained by inflow of cold groundwater due to predominance of a glacial silt subsurface in the study area. Other studies indicate that buffers of 100 feet or greater are needed in some circumstances to protect streams from temperature increases with clearcuts (Steinblums *et al.* 1984, Kiffney *et al.* 2003). Although clearcuts were used in these two studies, the results demonstrate that vegetation that is 100 feet away from streams contributes shade to streams in some situations, and that is relevant to riparian thinning projects.

The LFH streams in the action area are on the Clean Water Act section 303(d) list of the Oregon Department of Environmental Quality for exceeding summer rearing temperatures for salmonids, and it is important to prevent any increases in water temperature to avoid adverse effects on ESA-listed salmonids. The USFS proposes to protect stream temperature by avoiding timber felling on LFH and applying no-cut buffers on all other steams. Most of the perennial streams between 0 and 1 mile upstream of LFH will have 100-foot wide no-cut buffers that, combined with trees left after thinning, are likely to protect sufficient shade on the streams to prevent any increases in stream temperature. Five perennial streams within four units will have 60-foot wide no-cut buffers on streams that are east-west oriented and will either only be thinned on the north side of the unit or will have a 100-foot no-cut buffer on the south side of the unit. Vegetation on the south bank of these streams is more critical for stream shade than vegetation on the north bank. The perennial streams that are greater than 1 mile from LFH will have 50-foot no-cut buffers. It is possible that a 50-foot no-cut buffer could decrease the amount of stream shade and increase temperatures of these streams. However, the perennial streams are small (often 2 feet wide) during summer flows[10]. The overstory vegetation and small, understory vegetation would likely continue to shade most of these streams. The majority of the streams in the action area are characterized as steep, confined channels and do not allow for hyporheic exchange; however, there is opportunity for the streams to equilibrate due to heat exchange with the air if they are far enough above LFH. Although there could be a decrease in stream shade and a minor increase in stream temperature for some of these reaches, the streams will likely equilibrate with the air temperatures prior to reaching LFH. Further, there are several tributaries with uncut stands that will contribute cold water to ameliorate any increases in stream temperature. Therefore, any increases in stream temperatures in LFH are likely to be immeasurable, and therefore there will be an insignificant effect on stream temperature.

Road and landing work has the potential to increase stream temperature from the removal of vegetation adjacent to streams. Proposed road maintenance on approximately 61 miles of existing roads and reconstruction on approximately

[10] April 23, 2012, phone conversation between Chuti Fiedler, USFS, and Mischa Connine, providing information on the width of streams.

11.24 miles of roads will require the removal of small understory vegetation (brushing). Overstory shade canopy will not be removed on roads adjacent to streams. Culvert replacements will occur in the existing road bed and no overstory vegetation will be removed. Although the removal of understory vegetation will occur adjacent to streams, no overstory vegetation will be removed. The overstory vegetation will likely continue to shade a majority of the streams. Existing landings will not be used nor constructed within 100 feet of any streams. The 100-foot buffers will likely protect shade and prevent a measureable increase in stream temperature. Based on this information, there will be an insignificant effect on water temperature from road maintenance.

Timber hauling will occur on roads adjacent to LFH. However, there is no vegetation that will be removed due to hauling. Thus, timber hauling is not expected to affect stream temperature.

c. Suspended Sediment and Substrate Embeddedness**.** Timber felling and yarding disturbs soils and increases their potential for transport to area stream channels. No timber felling will occur adjacent to LFH. Units proposed for timber felling are at least 300 feet upstream from LFH and will maintain the following no-cut buffers: Perennial streams within 1,000 feet of LFH will have a 100-foot no-cut buffer and intermittent streams will maintain a 50-foot no-cut buffer. All streams between 1,000 feet and 1 mile from LFH will maintain a 50-foot no-cut buffer. Perennial streams greater than 1 mile from LFH will maintain a 50-foot no-cut buffer and intermittent streams will maintain a 30-foot no-cut buffer. Among other functions, these buffers will help stabilize streambanks and prevent the transport of soils to streams.

Ground-based yarding can be accomplished with relatively little damage to the existing shrub and herbaceous ground cover, thus limiting the exposure of bare soil and maintaining important root structure that holds soil in place. Skyline or multi-spanning yarding systems reduce soil impacts because the logs are suspended above the ground throughout much or all of the yarding process. Only minor disturbance of soil and ground vegetation is likely to occur with skyline yarding of younger trees (38 to 47 years old) because the logs are relatively small and light. Helicopter yarding results in the least amount of surface disturbance because the logs are lifted entirely above the ground and can be transported to the landing site without any contact with the ground. Given that soil disturbance will be minimal, the no-cut buffers are likely adequate to prevent nearly all sediment delivery to streams. However, if sediment enters the stream, it is unlikely that it will cause a measureable effect due to the small volume of sediment. Therefore, the effect of timber felling and yarding on suspended sediment and substrate embeddedness will be insignificant.

There is a high probability that the use of hauling roads will introduce some sediment into roadside ditches and, in some cases, into streams. The amount of sediment eroded from road surfaces depends on the amount of traffic, the

durability of the surface, the level of maintenance, the condition of the ditches and the amount of precipitation. Timber hauling on aggregate-surfaced roads will be restricted during the wet season (generally November 1-May 31). Timber hauling on paved roads will be allowed in both the wet and dry seasons; however, all hauling will be restricted at any time of the year if necessary to avoid sediment delivery to stream channels. There are five aggregate-surfaced roads that either adjoin a paved stream crossing, or parallel LFH within 1,000 feet or less. There will be no wet season hauling on these roads. Restriction of hauling on aggregate-surfaced roads during the wet season reduces the risk of runoff from precipitation. Any sediment that leaves the road surfaces due to run-off will disperse over land, into well-vegetated roadside ditches, or be stored within the smaller tributary streams along the hauling route. Therefore, the effect of timber hauling on suspended sediment and substrate embeddedness will be insignificant.

The USFS proposes to construct 0.4 miles of new, temporary roads, and 20 landings. The roads and landings will be located on ridge tops or stable, flat terrain. New, temporary road construction will occur at least 2 miles overland distance from LFH and will not occur within 200 feet of other streams. New roads will not cross any streams, and there will be no hydrologic connection to LFH. Landing construction will not occur within 500 feet of LFH or within 200 feet of any other streams. Road construction will occur during the dry season, and erosion control measures will be used to prevent offsite movement of disturbed or exposed soil. The new roads and landings will be stabilized for wet season conditions so that run-off will not be routed to streams. New road and landing construction will have discountable effects on these habitat indicators because the USFS will construct new roads and landings on stable, flat terrain, there will be no hydrologic connectivity to streams, and erosion control measures will be implemented to prevent off-site movement of disturbed or exposed soil.

The USFS proposes to construct 0.40 miles of new, temporary roads, reuse 3.63 miles of closed roads, and reconstruct 7.25 miles of decommissioned roads.[11] The majority of roads labeled as decommissioned were identified in the Roads EA as high risk. Two of the roads (7010014 and 7010120) were mistakenly included in the EA.[12] Among other reasons, the roads identified for decommissioning in the Roads EA were proposed for decommissioning to reduce the risk for surface erosion, gullying, and landslides. As some of these roads identified in the Roads EA are proposed for reconstruction for the Jazz timber sale, reconstruction of these roads would increase the risks for surface erosion, gullying, and landslides; however, any related effects will be likely be insignificant and/or discountable due the BMPs proposed by the USFS (and discussed below). Roads that are labeled as decommissioned in the BA are either currently open or received little or no treatment, other than an entrance berm.

[11] May 8, 2012 email from James Roden, USFS, to Mischa Connine, NMFS, clarifying the current status of the roads that are labeled as decommissioned.

[12] April 24, 2012e mail from Chuti Fiedler, USFS, to Mischa Connine, NMFS, providing corrected road information for the Clackamas Roads Decommissioning for Habitat Restoration, Increment 2 EA.

Construction will be restricted to the dry season, generally June 1 to October 31. The degree of soil disturbance and the transport potential of disturbed soils decrease when operations are limited to the dry season. The USFS proposes to reduce the risks of mass wasting, surface erosion, gullying, and landslides by implementing the following BMPs: (1) No sidecast road reconstruction will occur when the hill slope exceeds 30%, (2) installing additional ditch-relief culverts, and (3) erosion control measures will be implemented to prevent offsite movement of disturbed or exposed soil. Avoiding sidecast road construction on steep slopes will reduce the risks of the roads causing landslides (Murphy 1995). The placement of additional ditch-relief culverts will further disconnect roadside ditches from the stream network by providing additional capacity during storms, and therefore could reduce sediment inputs to streams (Rice *et al.* 1971). The ditches will deliver any runoff containing sediment to the forest floor, where it will be filtered out by vegetation, duff, and the soil during infiltration. Additionally, culvert replacement will not occur closer than 1,100 feet from LFH. Sediment generated from culverts is likely to settle out before reaching LFH. Erosion control measures will include silt fences, straw bales, matting, mulch, slash, water bars, and grass seed. The erosion control measures will prevent the majority of the sediment from moving offsite into streams. Although road and landing work have the potential to affect this indicator, there will not likely be a measurable effect in LFH. Therefore, the effect of road and landing work on suspended sediment and substrate embeddedness will be insignificant.

d. Chemicals and Nutrients. Timber felling, timber yarding, timber hauling, and road and landing work have the potential to affect the chemicals and nutrients habitat indicator due to the operation of machinery near streams. The proposed action does not include introduction of contaminants or excess nutrients into any stream channel. Furthermore, the BMPs to be implemented by the USFS for timber felling, timber yarding, timber hauling, and road and landing work reduce the aquatic contamination risk to extremely unlikely. Therefore, the potential for an effect on the chemical contamination indicator where LFH occurs is discountable.

e. Woody Material. Removal of wood mass within 1 SPTH has the greatest potential of affecting recruitment of woody material. Timber felling and yarding within riparian reserves may have a minor effect on the recruitment of functionally-sized wood to adjacent small stream channels. There will be no harvest or yarding adjacent to LFH. Perennial streams within 1,000 feet of LFH will have a 100-foot no-cut buffer and intermittent streams will have a 50-foot no-cut buffer. Most perennial streams between 1,000 feet and 1 mile from LFH will have a 100-foot no-cut buffer; however, there are five streams within four units that will have a 60-foot no-cut buffer on the north side of the streams. All intermittent streams between 1,000 feet and 1 mile from LFH will have a 50-foot no-cut buffer. Perennial streams greater than 1 mile from LFH will have a 50-foot no-cut buffer and intermittent streams will have a 30-foot no-cut buffer. Assuming the buffers are fully stocked, the no-cut buffers would capture approximately 25 to 85% of the existing wood recruitment from the adjacent stands (McDade *et al.* 1990).

Thinning is likely to preclude suppression mortality of trees in the treated units for decades. Although site-scale reductions in stream channel wood loads are reasonably likely to result from the proposed action, changes in LFH are not likely to be measureable. This is because the untreated buffers and adjacent stands, as well as stands along unlogged streams in the action area, likely will continue to provide adequate wood loading to affected streams in the near term to prevent measurable adverse effects (*e.g.*, changes in sediment transport, increases in stream velocity) in LFH. Based on this information, timber felling will have an insignificant effect on woody material.

Road and landing work have the potential to slightly reduce wood recruitment. There are no roads or landings that will be constructed within 1 SPTH of any streams. There will be no large woody material removed within 1 SPTH of any streams for road maintenance and road reconstruction activities. There will be no woody material removed for the proposed culvert replacements. Since no woody material will be removed within 1 SPTH of any stream, road and landing work is not expected to affect the availability of woody material.

Timber hauling does not have any causal mechanism to affect woody material.

f. Pool Frequency and Quality, Large Pools, Off-Channel Habitat, Refugia, Width to Depth Ratio, Streambank Condition, and Floodplain Connectivity. Changes in these channel-associated habitat indicators are dependent on changes to the physical processes that shape and develop these features. Since effects to habitat features related to these processes (*i.e.*, suspended sediment, substrate character, and woody material) will not be measurable, the effects on these six indicators will also be insignificant.

g. Change in Peak/Base Flows. Forest management activities can affect the rate that water is stored or discharged from a watershed. Total water yield typically increases due to reduced evapotranspiration (Harr *et al.* 1975, Harr 1976, Hetherington 1982, Duncan 1986, Keppler and Zeimer 1990, Jones 2000). Timber felling may result in winter flows with higher peak volumes, and potentially result in earlier peak discharge times (Satterlund and Adams 1992, Jones and Grant 1996). Timber yarding and fuels treatment may, to a lesser degree, increase the probability and magnitude of these effects. Hauling may increase compacted soil at landings, and on temporary and permanent roads. Timber harvest and roads can increase small peak flows in small basins (Bosch and Hewlett 1982), but there is less evidence to support larger flows or peak flows in larger basins (Beschta *et al.* 2000). The Collawash watershed is a relatively large basin at 97,000 acres and will likely ameliorate the effects of increased peak flows. The complex process of water routing can be modified by management via harvesting of trees and compaction of soil. Routing is predominantly affected by road and ditch networks (Harr *et al.* 1975, Jones and Grant 1996). New, temporary roads would not be hydrologically connected to the stream network from the installation of cross drains that would drain to relatively flat, vegetated slopes. Reconstructed roads

would have some hydrologic connection; however, the roads are already present on the landscape. Installation of additional cross-drains and ditch-relief culverts may ameliorate the hydrologic connectivity. Due to the large basin size of the Collawash watershed, the hydrological disconnection of new roads, and upgrading of cross-drains and ditch-relief culverts on reconstructed roads, there will likely be an insignificant effect to this indicator from the proposed project.

h. Drainage Network Increase. Timber felling, timber yarding, and timber hauling have no causal mechanism to affect an increase in the drainage network.

Road construction would cause a minor increase in the drainage network. The vast majority of road system in the action area is located above LFH. However, regardless of location, the change in measurable flow in LFH is not likely to be detectable. New semi-permanent roads (0.4 miles) would not be hydrologically connected to the stream network. Reconstructed roads (7.25 miles) will cause a minor increase in the drainage network. This minor increase in the drainage network will be offset to some degree by the installation of new cross drains that would drain to relatively, flat, vegetated slopes. Road decommissioning (11 miles) would restore and improve hydrological function to the drainage network. All decommissioned roads would be hydrologically disconnected from streams. Due to work completed under the road and landing work project element, the proposed action would affect this indicator, but the effect is likely to be insignificant.

i. Road Density and Location. The Analytical Process (AP) for Developing Biological Assessments for Federal Actions Affecting Fish within the Northwest Forest Plan Area (Interagency, 2004) defines the Road Density and Location habitat indicator value as mi/mi^2. Road Density and Location is categorized as 1) Properly functioning (<2 mi/mi^2), 2) functioning at risk (2-3 mi/mi^2), or 3) not properly functioning (>3 mi/mi^2). The USFS reported that the current road density in the Collawash watershed is 1.6 mi/mi^2 and is rated as "properly functioning". The USFS proposes to construct 0.40 miles of new, temporary roads, reuse 3.63 miles of closed roads, and reconstruct 7.25 miles of decommissioned roads.[13] There will be a short-term increase in road density from 1.6 mi/mi^2 to 1.68 mi/mi^2 from the construction and reconstruction of temporary roads. Although there would be a short-term increase in road density, the road density indicator would be maintained as "properly functioning" and would have an insignificant effect. Roads labeled as closed and decommissioned are not considered part of the road network and are not accounted for in the current road density figures. It is unknown how many miles of closed or decommissioned roads are present. However, the USFS reported that 1.51 miles (21%) of roads labeled as decommissioned were never decommissioned. Based on this information, NMFS assumes that the road densities in the Collawash watershed are greater than what is reported by the USFS and could be underestimated. The USFS proposes to

[13] May 8, 2012 email from James Roden, USFS, to Mischa Connine, NMFS, clarifying the current status of the roads that are labeled as decommissioned.

decommission the new and reconstructed roads after project implementation. Although the USFS proposes to decommission these roads after project implementation, it is evident that decommissioning does not always occur. With each additional proposal of new, temporary roads and reconstructed roads, the road density may be increasing in the watershed but are not being accounted for in the road density numbers. Informed by historical decommissioning practice (as described in the BA), NMFS assumes that approximately 21% of the roads may not be decommissioned after project completion. This could increase the road density in the Collawash watershed from 1.6 mi/square mile to 1.62 mi/square mile. Although there could be a long-term increase in road density, the road density indicator would be maintained as "properly functioning" and would have an insignificant effect.

j. Disturbance History and Disturbance Regime. The NMFS determined that the proposed action will affect the disturbance history and disturbance regime indicators, and determined that the effects will be insignificant in magnitude. These are watershed condition analysis indicators associated with spawning, rearing, and migration. The NMFS concludes that the effects of the proposed action are insignificant to the disturbance history and disturbance regime indicators because (1) The harvest only treats managed stands; (2) effects of the proposed activities are minimized in part by the no-cut buffers; (3) road reconstruction will occur on previously constructed roads (4) new road construction is temporary with no hydrological connections to the stream network; and (5) all project elements will have discountable, or insignificant effects on all the other habitat and watershed condition indicators. Overall, NMFS' conclusion is that the effects from the project elements on the disturbance history and regime indicators are insignificant.

k. Riparian Reserves. The proposed project will cause a short-term effect to this watershed condition indicator. The magnitude of effect can be assessed by referring to the likely effects on related individual habitat indicators (*e.g.*, temperature, wood recruitment). Although effects to some of the habitat indicators may occur, but these effects are likely to be insignificant, and will not result in adverse effects to LFH.

Effects on Listed Species and Critical Habitat

The following discussion applies the analysis of individual habitat indicators to listed species and their critical habitats to determine if there are likely to be adverse effects on those species or habitats, or not.

Individual LCR coho salmon, UWR Chinook salmon, and UWR steelhead will be exposed to the above-described effects of the proposed action. Overall, the effects of the proposed action are reasonably certain to include discountable and/or insignificant, negative changes to water temperature, suspended sediment, physical barriers, chemicals/nutrients, woody material, pool

frequency and quality, large pools, off-channel habitat, refugia, width to depth ratio, streambank condition, floodplain connectivity, change in peak/base flow, drainage network increase, road density and location, disturbance history and regime, and riparian reserves because of reduced shade, soil disturbing activities, created openings, and decreased wood volume. Because of the use of proposed design criteria including no-cut buffers, restrictions on yarding corridors, required minimal suspension during yarding, road maintenance, road reconstruction, road construction, haul route inspections, and suspension of wet season haul to prevent road surface degradation and generation of sediment, as well as the limited scope of the project, and general site-specific characteristics, NMFS is also reasonably certain that any associated effects on listed species will be of such a small magnitude that that they could not be meaningfully measured, detected, or evaluated and/or extremely unlikely and therefore discountable. Furthermore, NMFS analyzed the combined effects from the proposed action on LCR coho salmon, UWR Chinook salmon, and UWR steelhead and is reasonably certain that the combined effects will also be insignificant and/or discountable.

The proposed action will affect freshwater spawning, rearing, and migration critical habitat PCEs of UWR Chinook salmon and UWR steelhead, including substrate, water quality, water quantity, floodplain connectivity, forage, and natural cover. As described above, NMFS is reasonably certain that effects to critical habitat from the proposed action will be discountable and/or insignificant. Furthermore, NMFS also analyzed the combined effects from the proposed action on designated critical habitat and is reasonably certain that the combined effect to critical habitat will also be insignificant and/or discountable.

There are no other concurrent Federal action consultations within the watersheds that, when combined with the proposed action, would change the effects analysis for this action. In addition, there are no interrelated or interdependent actions related to the proposed project that require consideration. All of this information was used to make an overall project effect determination.

Summary

NMFS analyzed the combined impacts of all of the project elements of the proposed action on LCR coho salmon, UWR Chinook salmon, UWR steelhead, and designated critical habitat and concludes that all effects of the proposed action are discountable and/or insignificant and therefore are NLAA LCR coho salmon, UWR Chinook salmon, UWR steelhead, and designated critical habitat.

Reinitiation of Consultation

Reinitiation of consultation is required and shall be requested by the Federal agency**,** or by NMFS, where discretionary Federal involvement or control over the action has been retained or is authorized by law and (1) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (2) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this concurrence letter; or if (3) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16). This concludes the ESA portion of this consultation.

MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

For purposes of MSA, “adverse effect” means any impact which reduces quality or quantity of EFH. Adverse effects may include direct, indirect, site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions [50 CFR 600.910(a)].

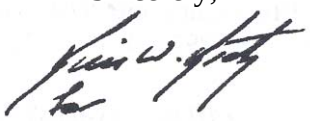
Because the properties of EFH that are necessary for the spawning, breeding, feeding or growth to maturity of managed species in the action area are the same or similar to the biological requirements of the ESA-listed species as analyzed above, and because the conservation measures that the Federal agency included as part of the proposed action are adequate to avoid, minimize, or otherwise offset those adverse effects to designated EFH, NMFS concurs that the proposed action would not adversely affect EFH. Further, NMFS has no conservation recommendations to make at this time and no reporting is necessary. This concludes the EFH portion of this consultation.

DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

This letter meets Data Quality Act standards for utility, integrity and objectivity.

Please direct questions regarding this letter to Mischa Connine in the Willamette Basin/Lower Columbia Branch of the Oregon State Habitat Office, at 503-230-5401.

Sincerely,



William W. Stelle, Jr.
Regional Administrator

cc: Chuti Fiedler, U.S. Forest Service

LITERATURE CITED

Beschta, R.L., M.R. Pyles, A.E. Skaugset, and C.G. Surfleet. 2000. Peakflow responses to forest practices in the western Cascades of Oregon, USA. J. Hydrol. 233: 102-120.

Bosch, J.M., and J.D. Hewlett. 1982. A review of catchment experiments to determine the effect of vegetation changes on water yield and evapotranspiration. J. Hydrol. 55(1-4): 3-23.

Brazier, J.R., and G.W. Brown. 1973. Buffer strips for stream temperature control. Research Paper 15, Oregon State University, Corvallis.

Duncan, S.H. 1986. Peak discharge during thirty years of sustained yield timber management in two fifth order watersheds in Washington state. Northwest Science 60(4):258-264. (In: Adams and Ringer 1994).

Duncan, S.H., R.E. Bilby, J.W. Ward, and J.T. Heffner. 1987. Transport of road-surface sediment through ephemeral stream channels. Water Resources Bulletin, American Water Resources Association. 23(1): 113-119.

Gomi, T.R., D. Moore, and M.A. Hassan. 2005. Suspended sediment dynamics in small forest streams of the Pacific Northwest. Journal of the American Water Resources Association 41(4):877-898.

Fleuret, J.M. 2006. Examining effectiveness of Oregon's forest practice rules for maintaining warm-season maximum stream temperature patterns in the Oregon Coast Range. M.S. thesis, Oregon State University, Corvallis.

Harr, R.D. 1976. Forest practices and streamflow in western Oregon. General Technical Report GTR-PNW-49. U.S. Dept. of Ag., Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, OR.

Harr, R.D., W.C. Harper, J.T. Krygier, and F.S Hsieh. 1975. Changes in storm hydrographs after road building and clear-cutting in Oregon coast range. Water Resour. Res. 11(3): 436-444.

Hetherington, E.D. 1982. A first look at logging effects on the hydrologic regime of Carnation Creek Experimental Watershed. pp 36-44. In: Hartman, G. (ed). Proceedings of the Carnation Creek Workshop, a 10 year review. Malaspina College, Nanaimo, B.C. 404 pp. (In Adams and Ringer 1994).

Jones, J.A. 2000. Hydrologic processes and peak discharge response to forest removal, regrowth, and roads in 10 small experimental basins, western Cascades, Oregon. Water Resour. Res. 36(9): 2621-2642.

Jones, J.A., and G.E. Grant. 1996. Peak flow responses to clear-cutting and roads in small and large basins, western Cascades, Oregon. Water Resour. Res. 32: 959-974.

Keppler, E.T., and R.R. Ziemer. 1990. Logging effects of streamflow: water yield and summer low flows at Caspar Creek in Northwestern California. Water Resour. Res. 26(7): 1669-1679.

Kiffney, P.M., J.S. Richardson, and J.P. Bull. 2003. Responses of periphyton and insects to experimental manipulation of riparian buffer width along forest streams. J. Appl. Ecol. 40: 1060-1076.

McDade, M.H., F.J. Swanson, W.A. McKee [and others]. 1990. Source distances for coarse woody debris entering small stream in western Oregon and Washington. Canadian Journal of Forest Research 20:326-330.

Murphy, M.L. 1995. Forestry impacts on freshwater habitat of anadromous salmonids in the Pacific Northwest and Alaska B requirements for protection and restoration. NOAA Coastal Ocean Program Decision Analysis Series No. 7. NOAA Coastal Ocean Office, Silver Spring, MD. 156 p.

Rice, R.M., J.S. Rothacher, and W.F. Megahan. 1971. Erosional consequences of timber harvesting: An appraisal. In National Symposium on Watersheds in Transition, p. 321-329. American Water Resources Association.

Satterlund, D.R. and P.W. Adams. 1992. Wildland Watershed Management. John Wiley & Sons, Inc., New York. 436 p.

Steinblums, I. 1977. Streamside buffer strips: survival, effectiveness, and design. M.S. thesis.: Oregon State University, Corvallis, Oregon. 181 p.

Steinblums, I.J., H.A. Froehlich, and J.K. Lyons. 1984. Designing stable buffer strips for stream protection. J. Forestry 82(1):49-52.

USDA (US Department of Agriculture, Forest Service). 2011. Clackamas road decommissioning for habitat restoration, increment 2, environmental assessment. 130 p.

USDA (US Department of Agriculture, Forest Service) and BLM (Bureau of Land Management). 1994. Record of decision for amendments to Forest Service and Bureau of Land Management planning documents within the range of the northern spotted owl. Standards and guidelines of habitat for late-successional and old-growth forest related species within the range of the northern spotted owl. USGPO 1994-589-111/00001. Region No. 10. United States Government Printing Office, Washington, D.C.

Wilkerson, E. J.M. Hagan, D. Siegel, and A.A. Whitman. 2006. The effectiveness of different buffer widths for protecting headwater stream temperature in Maine. Forest Science 52(3):221-231.