

Pre-Operations Report

Operation Name: Old Highway
County (%): Lincoln (100%)
Elevation: 469 – 1,086 ft
Legal Description: T11S R8W, Sections(s) 15, 16

Tax Code(s):
BOF%: 100% **CSL%:** 0%
Sale Quarter: 2

I. VOLUME AND VALUE SUMMARY

Table 1. Types, Acres, and Value

Unit	Harvest Type	Anticipated Product ^c	Gross Acres	Net Acres	MBF/ Acre ^a	MBF/ Unit ^a	\$/MBF ^b	\$/Unit
1	CC	DF-M, RA-S	19	16	41.0	656	\$500	\$328,000
2	CC	DF-L, RA-S	33	27	41.0	1,107	\$500	\$553,500
3	PC	DF-M, RA-S	5	4	14.0	56	\$500	\$28,000
Total		Regeneration	52	43		1,819		
		Partial Cut	5	4				
						Gross Value		\$909,500
a. Estimated harvest volume per acre for Unit.						Project Costs		\$48,123
b. Estimated ‘price’ (excluding Project Costs)						Net Value		\$861,377
c. Anticipated Product (AA-B-C) – AA) SLI species code of the bid species, B) Size Class (S – small [average DBH < 15], M – medium [average DBH 15 to 23], L – large (average DBH > 23]), C) Special Product (P – Premium, H – Hardwood)								

II. CURRENT STAND CONDITION:

Table 2. Stand Inventory Information

Unit	Stand ID	Measured/Imputed ^a	Species	Age	TPA	DBH	BA	SDI	Net Acres ^b
1	18426	I = 18287	RA,DF	75	126	16	181	46%	8
1	18429	M	RA,RC	80	200	14	216	58%	8
2	18417	M	DF,RA	50	119	19	224	54%	9
2	18760	I = 18138	DF,RA	79	55	26	195	41%	18
3	18417	M	DF,RA	50	119	19	224	54%	3

- a. Identify the source of stand inventory information. Use the following codes: M = Measured SLI data, I = Imputed SLI data, P = Pre-Cruise Plots, O = other (if other, describe below).
- b. Net Acres have been rounded to the nearest whole acre in this table. Stand that comprise less than one acre of a harvest unit are not reported in this table, so the total "Net Acres" per unit in this table may not equal the total "Net Acres" per unit in table 1.

- Portions of Unit 2 were thinned in 1997 and portions of Units 2 and 3 were thinned in 2006.

Table 3. Additional Stand Information

Unit	Stand ID	Snags/ Acre ^a	Down Wood/ Acre ^b	Forest Health		
				SNC	Phellinus	Other ^c
1	18426	4	85			
1	18429	6	204			Scotch broom
2	18417	2	108			Douglas-fir bark beetle mortality
2	18760	2	256			
3	18417	2	108			

- a. Identify the number of hard snags per acre (decay classes 1 and 2)
b. Identify the cubic feet per acre of hard down wood (decay classes 1 and 2)
c. Describe “Other” forest health issue.

III. WILDLIFE AND T&E SPECIES CONSIDERATIONS:

Foresters need to read the Biological Survey Tracking Form (BSTF) prior to sale layout in order to ensure all T&E related information is understood. (Consult the ODF Wildlife Biologist assigned to the District for the BSTF.)

- A portion of the operation is within (Check all that apply):
☐ TAS ☐ NSO Circle or Home Range, or Baseline or Elevated Baseline Thiessen (BA required)
☒ MMMA (BA required) ☐ None
- Are Surveys for NSO being conducted for any portion of this operation?
☐ No ☒ Density Surveys ☐ Operational Surveys ☐ Combination (Density/Operational)
Notes:
- Are Surveys for MM being conducted for any portion of this operation?
☒ Yes (complete) ☐ No (Not habitat) ☐ N/A (outside of MM survey zone)
Notes:
- Are there any additional considerations (FPA Resource Sites, Species of Concern sites/Plant [from ORBIC¹], big game habitat/management, other)?
☒ No ☐ Yes, please describe:

¹ Oregon Biodiversity Information Center
West Oregon District
Approved – June 2024

IV. DESIRED FUTURE CONDITION AND PRESCRIPTION:

Table 4. Stand Structure Information

Unit	Stand ID	Current	Desired Future	Inside of HCA	Net Acres ^a
1	18426	UDS	GEN	No	8
1	18429	UDS	GEN	No	8
2	18417	UDS	GEN	No	9
2	18760	UDS	GEN	No	18
3	18417	UDS	GEN	No	3

a. Net Acres have been rounded to the nearest whole acre in this table. Stand that comprise less than one acre of a harvest unit are not reported in this table, so the total “Net Acres” per unit in this table may not equal the total “Net Acres” per unit in table 1.

Table 5. Partial Cut Prescription (Complete only for Partial Cut and HCA Harvests)

Unit	Harvest Type	Harvest Species	Residual			
			Species	TPA	BA	% SDI
1-2	CC					
3	PC	DF	DF	72	140	34

- Unit 3 is a planned healthy conifer thinning. Approximately 4 acres of this unit are within a Marbled Murrelet Management Area (MMMA) buffer. This area is a dense 50-year-old Douglas-fir stand with a component of red alder. This area was originally intended to be part of the clear-cut but was changed to a thinning with the designation of the nearby MMMA. The intent of thinning within this area is to promote habitat by thinning out the dense structure allowing more light to reach the forest floor. This will help maintain growth and enhance limb and crown structure of the dominant cohort and foster natural recruitment of minor tree and understory species. It will also improve trajectories for understory development, compositional diversity, and canopy layering ultimately aiding in the development of higher quality suitable habitat and mature forest connectivity. Residual tree selection will emphasize preserving the trees of good form and vigor with the largest diameter and height. Minor species will be evaluated to reserve based on the composition of the stand and the amount of diversity present. District staff will work with the ODF Biologist to further refine prescription strategies for these areas during sale layouts.

V. HARVESTING AND ACCESS CONSIDERATIONS:

Table 6. Harvest System and Access Summary

Unit	Harvest System		Slope (%)	Area Access	Seasonal Access
	% Cable	% Ground			
1	80	20	35-65	Established	All weather
2	90	10	35-65	Established	All weather
3	80	20	35-65	Established	All weather

- Haul Route: Cline Summit Road to Cline Loop Road and in unit spurs to Hwy 20 Cutoff Road to Cline Loop Road.
- Haul Route Condition: Cline Loop Road and the in-unit spurs will need maintenance prior to log haul.
- Are easements required for the haul route? ☐ Yes ☒ No

Table 7. Transportation Management Summary (Miles)

Activity	Mainline	Collector	Rocked Spur	Dirt Spur
Construct	0	0	0	0
Improve, Rock, and/or Maintain	0	0	4.2	0.3
Block (Dormant)	0	0	0	0.3
Vacate	0	0	0	0
Stream Crossings: install on existing road (IE)/replace on existing road (R)/install on new construction road (NC)				
Type F - SSBT ^a	0	0	0	0
Type F – Non-SSBT	0	0	0	0
Type N	0	0	2 (R)	0

a. Salmon Steelhead and Bull Trout (SSBT)

4. Rock Sources for this operation: Purchaser will buy rock from State approved commercial rock source.
5. Are property line surveys required for this operation? ☒ Yes ☐ No
 - Approximately 2000' of line is surveyed along the north boundary on Unit 1 there is a timber type change along this line that can be identified for all except 350'. Staff will further recon property line during sale layout, if a property line cannot be established the boundary will be surveyed by ODF staff or the Unit Boundary will back off of the property line.
6. Is there planned new road construction planned within RCAs/HCAs? ☐ Yes ☒ No

VI. AQUATIC RESOURCES:

1. Do any streams require additional review for the following?
 - Fish presence ☐ No ☒ Yes
 - Perennial/Seasonal: ☒ No ☐ Yes
 - H.E.R./P.D.F.T: ☒ No ☐ Yes
 - Several unknown streams may exist within all Units but it is believed that these are seasonal or perennial and will not require fish presence surveys. Buffers shown on the map indicate where it is believed perennial streams are located. Streams will be verified during sale layout.
2. Is a portion of the operation within an Aquatic Anchor? ☒ No ☐ Yes, name:
3. Are any Points of Diversion (Domestic Water) located downstream within 3,000 feet of Operation? ☒ No ☐ Yes, describe protection measures:
4. Is there a Stream Enhancement Project planned? ☒ No ☐ Yes, please describe:

VII. SLOPE STABILITY ISSUES:

Table 8. Summary of Slope Stability Assessment

Unit	Harvest Review Complete?	Public Safety Review Complete?	Additional Comment
1	Y	Y	--
2	Y	Y	See Recommendations
3	Y	Y	See Recommendations

- **Geotech Review:** Initial geotechnical reviews have been completed and those findings have been incorporated into No Harvest buffers. Additional consultation with Geotechnical Specialists will be done during sale layout as needed.

VIII. RECREATION RESOURCES:

1. Recreation issues/coordination: ☒ No ☐ Yes, please describe:
 - No recreation resources exist within the sale boundaries or are within proximity to the sale areas.

IX. HISTORIC AND CULTURAL RESOURCES:

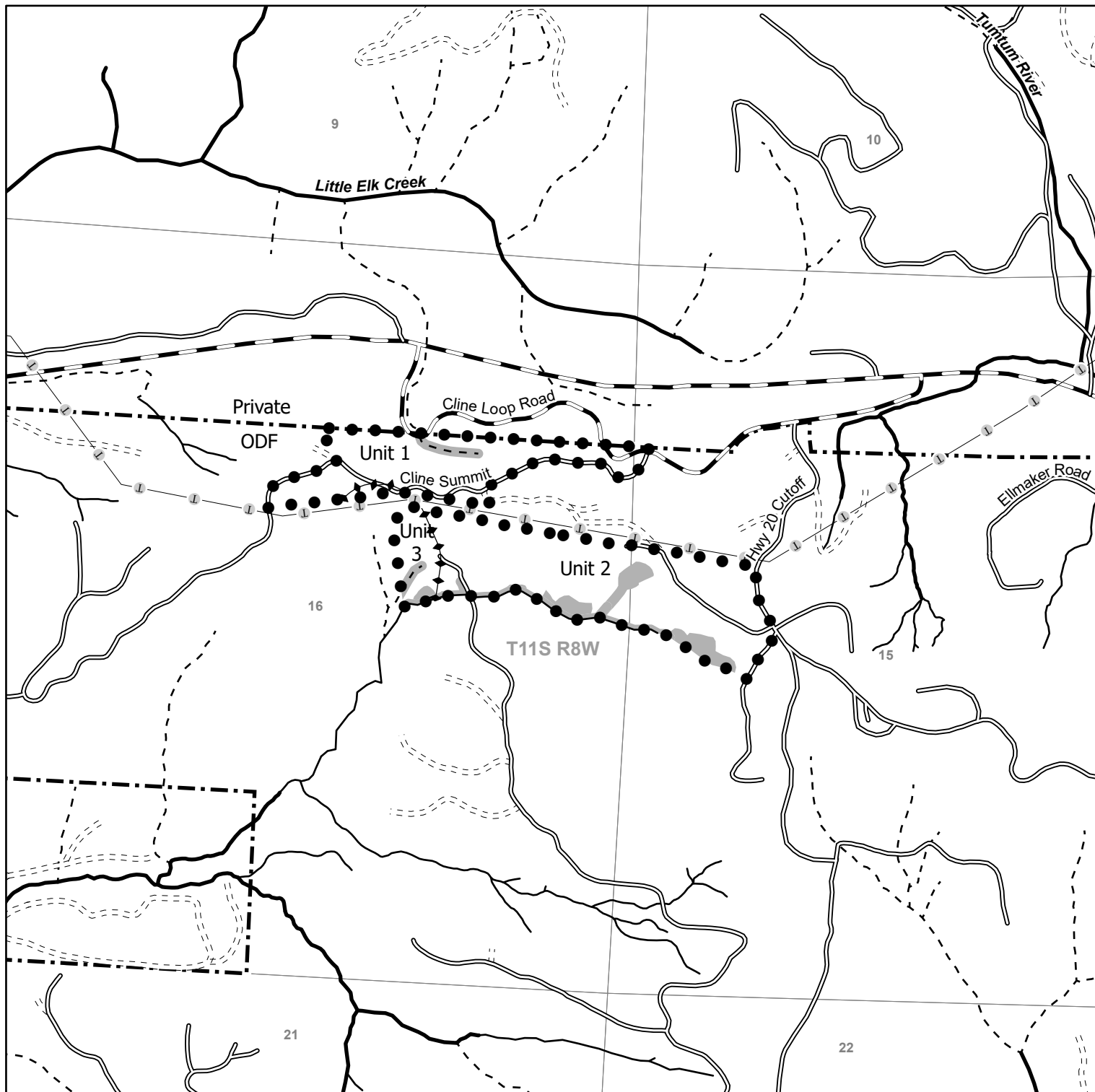
1. Has the sale been reviewed by a qualified archaeologist for potential historic or cultural resource presence?
☒ Yes ☐ No

X. SCENIC RESOURCES:

1. Are there scenic resources in the vicinity of this operation that need additional consideration?
☐ No ☒ Yes, please describe:
 - Unit 2 may be visible from Hwy 20. The potential for scenic impacts will be considered when planning the leave tree locations within the unit.

XI. OTHER RESOURCE CONSIDERATIONS:

1. Has a review of the FLMCS layer determined that any resources not mentioned in the report above need additional planning? ☒ No ☐ Yes, describe below.
2. Are there any other resources present that need additional consideration? ☐ No ☒ Yes, please describe:
 - BPA Transmission line between Units 1, 2, and 3. Operators will need to exercise care while operating near the high voltage power lines. The purchaser shall follow BPA's guidelines for logging activities on or near BPA Rights-Of-Way.
 - Adjacent Landowner: Private Non-Industrial



Legend

- ◆◆ Unit Boundary
- Sale Boundary
- No Harvest Area
- Transmission Lines
- Paved
- Surfaced
- Unsurfaced
- Fish Stream
- Perennial Nonfish Stream
- Unknown Stream
- Ownership Boundary

FY 2025 - West Oregon District Old Highway Portions of Section(s) 15, 16, T11S, R8W, WM. Lincoln County

State Forest Division
02/15/2024

This product is for informational use and may not be suitable for legal, engineering, or surveying purposes. Variations may exist between and among data sets in use by the Department of Forestry. This map was developed using the Statewide Stream Layer.

1:12,000

1,000 500 0 1,000 Feet

Unit 1	16 Acres (CC)
Unit 2	27 Acres (CC)
Unit 3	4 Acres (PC)

Total 47 Acres





Oregon

Tina Kotek, Governor

Department of Forestry

Forest Grove District

801 Gales Creek Road

Forest Grove, OR 97116-1118

503-357-2191

FAX 503-357-4548

www.oregon.gov/ODF



"STEWARDSHIP IN FORESTRY"

TO: Cody Valencia, Unit Forester, West Oregon District

FROM: Dax Strubb, Wildlife Biologist, Northwest Oregon Area

SUBJECT: **Preliminary Biological Assessment for the Old Highway Timber Sale**

DATE: March 28, 2024

Old Highway is a timber sale in the 2025 Annual Operations Plan (AOP) of the West Oregon District (Lincoln County) that entails clearcutting and partial cutting of middle-aged stands. One partial cut harvest unit is located within the buffer portion of the Old Highway Marbled Murrelet Management Area (MMMA). Selective harvest thinning, road improvement, and guyline and tailhold anchors are proposed within the buffer portion of the MMMA.

Timber harvest-related activities in the buffer (the 100-m buffer) of the Old Highway MMMA have the potential to negatively affect nesting birds and their designated occupied habitat (DOH) therein. Protection measures, such as seasonal and operational restrictions, can be used to avoid or minimize the potential to impact murrelets and their habitat. If the protection measures described in this BA are applied during the planning and operational phases of the timber harvest, the Old Highway timber sale is expected to have a **low** risk of incidental take of marbled murrelets. However, operations should be halted, and regulatory agencies be consulted immediately if the outlined protection measures are not followed.

INTRODUCTION

Purpose

West Oregon District has proposed the timber sale, Old Highway (FY 2025) in Lincoln County (Figure 1). Harvest Unit 3 is entirely within the Old Highway MMMA buffer (3.9 acres).

The district has proposed a partial cut thinning for this timber sale within the MMMA buffer, which will increase stand-level structure and encourage growth and limb development of the remaining trees by reducing competition for available resources. Planned harvest outside of the MMMA, will consist of a clear cut. Other proposed harvest-related operations in the buffer will include tailhold and guyline anchors, and road improvement.

The purpose of this Biological Assessment is to describe the establishment and status of the MMMA, assess potential impacts this timber sale may have on these DOH, and detail the measures recommended to minimize impacts. ODF policies are discussed and an assessment of the potential risk of harvest to occupancy and productivity of marbled murrelets is provided.

Policy Direction

Per ODF Policies, impacts from management activities within a MMMA should be quantified and measures implemented to avoid or minimize potential impacts to the species and its habitat. This BA complies with the following ODF Policies (ODF 2013):

Policy 1.1.2.15 – Designing MMMA's on ODF-managed lands.

Policy 1.1.2.16 – Designating occupied habitat.

Policy 1.1.2.17 – Designating 100-meter-wide buffers.

- Policy 1.1.2.18 – Document and retain MMMA documentation.
- Policy 1.1.2.19 – Timber harvest-related activities in designated occupied habitat.
- Policy 1.1.2.20 – Seasonal restrictions in designated occupied habitat.
- Policy 1.1.2.21 – Permitting timber harvest-related activities in designated buffers.
- Policy 1.1.2.23 – Seasonal restrictions in designated buffers.
- Policy 1.1.2.27 – Review any timber harvest-related activities within ¼ mile of any survey area associated with any subcanopy detection indicative of occupancy.

BACKGROUND

Unit 3 Information

Unit 3 is a 4 net acre partial cut in a Douglas-fir dominant stand. Current stand characteristics include 50-year-old trees, stocked at 119 trees per acre (TPA), an approximate average diameter of 19 inches, and a basal area of roughly 224 ft²/acre.

Based on 2020 LiDAR imagery, the tree heights in the harvest unit range from 100 to 185 feet (Figure 2). The stand has not grown larger limbs and thus trees in the sale units have yet to develop platform structures. There is high canopy cover with canopy overlap among adjacent trees in many areas. There is some variation in canopy closure and patchiness throughout the stand due to previous partial cut harvest, abiotic components such as soils, topography, and sunlight, or biotic components such as disease and competition (Figure 2).

There is some within-stand variability in the amount of cover and height of vegetation, but generally understory cover is light to moderate (approximately 65%). The present understory plant composition includes swordfern, oceanspray, and blackberry.

The treatment is a partial cut that would result in a decreased tree density of approximately 72 TPA, reduce the basal area to 140 ft²/acre, and maintain at least 40% canopy cover. Hauling operations will use existing road systems located throughout the area (Figure 1).

MMMA Information

Old Highway

The Old Highway MMMA was designated in 2024 following one sub-canopy detection during the 2023 survey season. Stands within the MMMA have a recent history of murrelet occurrence, which is limited to the single observation described above. The current MMMA includes 21 acres of DOH and 40 acres of buffer (Figure 2).

Suitable nesting habitat is consistent throughout the DOH and mostly consists of open-grown trees. The understory plant composition within the DOH portion of the MMMA includes a well-developed shrub and hardwood layer, including vine maple, big-leaf maple, red alder, swordfern, and hazel, along with a minor component of salmonberry.

Harvest Unit 3 includes operations planned within the 100-m buffer of the MMMA. Approximately 3.9 acres of buffer will be thinned by cable yarding (Table 1). There is a high likelihood tailholds and guyline anchors may be selected within the MMMA buffer and DOH.

IMPACT ASSESSMENT

Various timber harvest-related activities may negatively affect murrelets and nesting habitat directly by causing mechanical damage to suitable nesting trees and related habitat features or indirectly via subsequent nest predation or wind-throw (Luginbuhl et al. 2001, Malt and Lank 2007 and 2009, Raphael et al. 2002). Of the potential impacts considered in this BA, mechanical damage to trees, windthrow, and nest predation have the highest probability of influencing risk to nesting birds within the MMMA. Because the sale has not been prepared in the field, the exact arrangement of landings, cable corridors and tailholds are unknown at this time; however, possible site-specific effects are discussed below. Cumulative impacts associated with past and future operations were considered.

Mechanical Damage

Reduction of canopy cover within and adjacent to marbled murrelet nesting habitat can affect the availability of nest platforms and micro-site conditions at potential nest platforms (Ralph et al. 1995). Impacts to nest platforms or trees can occur during the falling and removal of trees. Micro-site conditions can be altered when open canopies change the exposure, temperature, or moisture conditions at the platform limb (van Rooyen et al. 2011).

Thinning and tailholds are proposed directly adjacent to DOH and tailholds are anticipated within DOH. Removal of cover trees adjacent to suitable nesting trees may damage limbs or increase exposure, and potentially eliminate the structure entirely or reduce its suitability because of degraded micro-site conditions. Prior to harvest, the identification of suitable nest trees, their associated cover trees, and the implementation of operational avoidance plans should substantially minimize the risk of damaging and degrading nesting habitat. A full list of protection and avoidance measures are discussed in the following section.

Noise Disturbance

Human-caused noise disturbance has resulted in the loss of eggs and chicks at nests (Hamer and Nelson 1998, Hébert and Golightly 2006). Sources of the noise have included chainsaws, vehicles, and recreational activity. Most nest failures in northern California were observed after exposure to chainsaw noise during the early portion of the nesting period while adults were still incubating eggs (Hébert and Golightly 2006). The potential impacts from noise disturbance will be mitigated by applying seasonal timing restrictions that prohibit the use of chainsaws and other mechanized equipment within and adjacent to the DOH portion of the MMMA during the nesting period.

Windthrow

Timber harvest can influence the probability of windthrow in a stand by acting on site and stand-specific factors such as percent slope, slope aspect, elevation, tree height/age, and tree density (Ruel 1995, Sinton et al. 2000). Windthrow can damage an entire stand or portions therein and affect the availability/quality of nesting habitat and nesting success (van Rooyen et al. 2011). In the Oregon Cascade Range, Sinton et al. (2000) found a higher incidence of windthrow along the edges of clearcuts than natural edges. In the Cummings Creek Wilderness of the Coast Range, windthrow was significantly higher on hillsides than riparian areas that contained older trees with no previous fire history (Wimberly and Spies 2001). In 70–150-year-old Douglas-fir stands in Washington and Oregon, Williamson and Price (1971) sustained a 30% reduction of windthrow effects when 60–85% of the original basal area was retained.

Although the risk of windthrow is difficult to anticipate, several characteristics suggest a reduced likelihood of windthrow in the MMMA buffer. The approximately 50-year-old, 100 to 175-foot-tall trees proposed to be harvested within the buffers are considered a soft edge which may reduce the probability of windthrow and edge effects within and surrounding DOH (van Rooyen et al. 2011).

Nest Predation

There is consensus that timber harvest activities in or near murrelet habitat have the potential to increase risk of predation by changing forest structure at various scales thereby attracting known predators such as corvids (i.e., jays and ravens) or other predators (Malt and Lank 2007 and 2009). The use of cable corridors may provide increased access to nests and/or promote a berry flush above pre-harvest conditions (e.g., blackberry, salmonberry, huckleberry, elderberry, etc.) in the understory, potentially resulting in higher levels of predator activity (Malt and Lank 2007 and 2009). Currently, the dense overstory canopy cover of most of the sale area suppresses berry production throughout most of the stand. Exceptions to this include areas near existing and abandoned roads, riparian areas, and old landings.

At the stand level, there is evidence that nest predation is higher along hard edges and near human settlements (Marzluff and Neatherlin 2006). Malt and Lank (2007, 2009) found that younger stands (i.e., soft edges) adjacent to habitat can reduce predation rates at and near edges. There is a > 100-foot difference in tree heights between the buffer and DOH such that only the tallest trees in the buffer are at the same height as the lower portions of the canopy in the DOH. Thus, the portion of the sale area that is within the buffer may continue to provide ameliorating effects on predation risk relative to more open stands or clearcut harvest.

Cumulative Impacts

Past, present, and reasonably foreseeable future activities within the MMMA were considered to evaluate whether the planned timber harvest would contribute to incremental impacts that may affect murrelets and their nesting habitat. The activities taken into consideration below are human activities such as timber harvest, recreational trails, and campsites, and natural events such as fire and windthrow.

Evidence of recent past timber harvest near the MMMA is scarce (Figure 2). One partial cut harvest occurred in the last decade near the western and southeastern edges of the MMMA buffer. No mapped recreational trails or campsites were noted during the review; however, there is known ATV use near the MMMA that should be mitigated.

PROTECTION AND AVOIDANCE MEASURES

The key to successfully implementing this operation, while maintaining a low risk to murrelets and their habitat, is understanding that special considerations will be necessary when operating near murrelet habitat. Operators must understand that prior planning and approval is required in areas of concern when designing logging plans, selecting tailholds, conducting yarding activities, and choosing cable corridor locations. Involvement of the Area Biologist or Designee early in the harvest process should greatly increase the likelihood of successful implementation of the protection measures resulting in minimized risk to murrelets and their habitat.

The proposed timber harvest has been reviewed by an Area Biologist to assess impacts to marbled murrelets and their nesting habitat. The assessment included an evaluation of MMMA configuration, overstory canopy cover, understory components, and topography. To consider the sale a low risk of impacting murrelets and their nesting habitat, the following protection measures must be implemented for harvest operations within the MMMA and should be included in the contract language:

Thinning Prescription

The USFWS has advised that thinning prescriptions should not result in less than 40% canopy cover, where berry-producing species are present, to avoid short-term berry flushes and long-term increases in food abundance for potential nest predators such as corvids. The proposed prescriptions for first-entry commercial thinning are expected to retain post-harvest canopy cover greater than 40%.

Thinning in the buffer and at the edge of DOH will not remove trees that contain suitable nest platforms or adjacent trees that provide cover to potential nest platforms. Considering the age of the stand that is proposed to be thinned, hand marking take trees and applying directional falling requirements in the contract is appropriate. Suitable nesting habitat is defined as relatively flat structures that are at least 4 inches wide, 33 feet from the ground, and contain thick (e.g., > 0.5 inch) moss, epiphyte, or duff layers. Suitable nesting structures may include tree limbs, dwarf mistletoe brooms, or unique platform features resulting from damage (e.g., epicormics branching and reiterated tops).

Seasonal Timing Restrictions

Refer to ODF State Forest Division Operational Policy for Marbled Murrelets for specific timing restrictions regarding harvest-related operational activities including road construction, felling for landing areas and corridors, yarding activities, and installation of tailhold and guyline anchors. These activities are subject to seasonal timing restrictions per ODF policy and should avoid disturbance to nesting murrelets (ODF 2013).

Trash Removal

Trash policing and removal from all harvest units, landing and roadways must be done daily. Store all food items and food waste inside appropriate containers or vehicles. Avian predators such as jays and ravens eat a wide variety of foods, and the presence of human food and food waste can attract and increase jay and raven numbers. Do not feed wildlife in the sale areas. Failure to adhere to these guidelines will result in a temporary suspension of activities until all trash is removed.

Tailhold and Guyline Use Restrictions

The use of tailholds and guyline anchors are not seasonally restricted; however, the use of heavy equipment or chainsaws to install these features are prohibited within the MMMA (occupied habitat and 100-m buffer) from April 1 through August 5. From August 6 through September 15, activities are allowed with daily timing restrictions. Daily timing restrictions prohibit the use of heavy machinery and chainsaws within 2 hours of sunrise and 2 hours of sunset. From September 16 to March 31, activities are unrestricted. If tailholds are installed from April 1 through August 5, non-mechanized methods such as an ax should be used and follow the guidelines as discussed in #5, below.

Specific criteria will be required for all tailholds and guylines to protect platform trees and associated cover or recruitment trees in the MMMA from damage. The criteria are as follows:

1. The following trees in DOH will **not** be selected for guylines or tailhold anchors:
 - a. Trees with potential nest platforms **or** immediately surrounding trees that provide cover to potential nest platforms.
 - b. When feasible, the largest trees in areas where the number of large trees is limited.
 - c. When feasible, minor conifer tree species that are not commonly found in the stand.
2. An ODF Area Biologist or a designee familiar with murrelet habitat and biology will inspect and approve all trees before each is used. A lead time of at least two weeks for all reviews or meetings with ODF representatives is required. No trees that are potential habitat or surrounding trees that provide cover to platform trees, as determined by an ODF Area Biologist or designee will be damaged or harvested.
3. Guylines or skylines will not be placed where they have the potential to damage platforms or platform trees.
4. No conifer trees will be felled within the DOH of the MMMA.
5. To protect trees used as guyline anchors, it is preferred that plates, nylon straps or other approved devices be utilized to prevent damage to trees. If this is not feasible, notching of the trees to prevent cable slippage will be limited to less than $\frac{1}{4}$ the circumference of the tree.
6. If no suitable guyline or tailhold trees exist, operational equipment such as a Yoder, which does not require guylines, or a dozer, which may serve as a tailhold or guyline, may be used provided no DOH is removed or destroyed when using such equipment.

Restrictions and Requirements for Construction and Improvement of Roads and Landings in Buffers

No construction of landings will occur within the DOH of the MMMA. Construction of roads, improvement of roads and landings, and yarding activities in buffers and at landings in buffers are seasonally restricted (from April 1 through August 5, then with daily timing restriction from August 6 through September 15) to prevent disturbance to nesting murrelets in DOH. Tree removal should be done only to the extent necessary for the specific operation. To prevent damage to platform trees and associated cover trees in the MMMA, the following trees will **not** be selected for removal for road construction, road improvement, landing areas or cable corridors in buffers:

1. Trees with potential nest platforms or immediately surrounding trees that provide cover to potential nest platforms as determined by an Area Biologist or designee.
2. When feasible, the largest trees in areas where the number of large trees is limited.
3. When feasible, minor tree species (not commonly found in the stand).

The following additional criteria apply to landings in buffers:

1. Seek to move landings out of buffers.
2. Utilize single, parallel corridor-type landings when landings must be in buffers.
3. If single, parallel corridor-type landings are not feasible and a spoke landing must be used, reduce the number of spoked corridors, and keep away from dominant trees. An ODF Area Biologist or a designee familiar with murrelet habitat and biology will inspect and approve all proposed road and landing locations. Lead time of at least two weeks for all reviews or meetings with ODF representatives is required. No trees that are potential habitat or surrounding trees that provide cover to platform trees, as determined by an ODF Area Biologist or designee will be damaged or harvested.
4. Landing improvement in buffers will be restricted to not greater than 0.25 acres in size.
5. To the extent practical, spoked landings constructed in buffers will be decommissioned and re-vegetated where appropriate. Decommissioning may include gates, tank traps, or boulder/stump placement. Revegetation for spoked landings will be addressed on a case-by-case basis.
6. Yard to the road with minimal road widening or extra brush clearing than already exists.
7. No conifer trees will be felled within the DOH of the MMMA.

If the protection measures cannot be met or the harvest operations within the affected MMMA's increase in scope or scale, then the low-risk determination may not be accurate.

RISK ASSESSMENT AND CONCLUSIONS

Old Highway Unit 3 is a partial cut in a middle-aged stand with low tree species diversity and suppressed understory. In my opinion, by conducting harvest activities outside the murrelet nesting season within the MMMA's, utilizing the protection and avoidance measures for tree selection, and exercising extreme prudence within the buffer and DOH of the MMMA, the risk of incidental take of marbled murrelets is **low**. If the protection avoidance measures cannot be

followed, the risk of incidental take of marbled murrelets will likely be elevated and sale area-related activities will require re-assessment directed towards modification and mitigation to reduce risk.

LITERATURE CITED

- Hébert, P. N. and R. T. Golightly. 2006. Movements, nesting, and response to anthropogenic disturbance of marbled murrelets (*Brachyramphus marmoratus*) in Redwood National and State Parks, California. Unpublished report, Department of Wildlife, Humboldt State University, Arcata, California and California Department of Fish and Game Report 2006-02, Sacramento.
- Luginbuhl, J. M., J. M. Marzluff, J. E. Bradley, M. G. Raphael, and D. E. Varland. 2001. Corvid survey techniques and the relationship between corvid relative abundance and nest predation. *Journal of Field Ornithology* 72:556–572.
- Malt, J. M., and D. B. Lank. 2007. Temporal dynamics of edge effects on nest predation risk for the marbled murrelet. *Biological Conservation* 140:160–173.
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Table 1. Spatial impacts at MMMA from proposed timber harvest operations of the Old Highway Timber Sale, West Oregon District.

MMMA Name	Total DOH ¹ Acreage	Total MMMA Buffer Acreage	Sale Acreage Within DOH	Sale Acreage Within Buffer	% DOH Affected	% Buffer Affected
Old Highway	21.4	40.4	0.0	3.9	0.0	9.7

¹ DOH = designated occupied habitat