Lewis River Hydroelectric Projects
Terrestrial Coordination Committee (TCC)
Meeting Agenda

Date & Time: **Wednesday, May 9, 2018**
9:00 a.m. – 3:00 p.m.

Place: **Merwin Hydro Control Center & Field Tour**
105 Merwin Village Court
Ariel, WA 98603

Contacts: **Kendel Emmerson (503) 813-6040; cell 503-703-7734**

Time	Discussion Item
9:00 a.m.	Welcome ➢ Review Agenda & 4/11/18 Meeting Notes ➢ Review and Accept Agenda & 4/11/18 Meeting Notes
9:15 a.m.	Land Acquisition Update (Confidential)
9:20 a.m.	Study/Work Product Updates o E-bikes o Lower Hanley Curry Meadow Restoration Status (MU 12) o Higsly I and II (MU 15) and 2018 WHMP budget o DNR Road Use Permit funds
9:50 a.m.	Safety Orientation for Field Tour
10:00 a.m.	**Depart for Field Tour - Joe Berry will join us for field tour**
10:30 a.m.	[1]Tour Cowlitz PUD Devil's Backbone proposed timber harvest areas
11:45 a.m.	**Lunch**
12:15 p.m.	➢ Review Pre-commercial thinning for wildlife vs forestry in Management Unit 37 ➢ Visit meadows created in MU 39 in 2017, if time allows
1:45 p.m.	Cougar Quarry for potential ash deposit site
3:00 p.m.	Next Meeting's Agenda ➢ Note: all meeting notes and the meeting schedule can be located at: http://www.pacificorp.com/es/hydro.html

PLEASE BRING LUNCH

Join by Phone
+1 (503) 813-5252 [Portland, Ore.]
+1 (801) 220-5252 [Salt Lake City, Utah]
+1 (855) 499-5252 [Toll Free]
Conference ID: 5847894

[1] Please bring rain gear, hard hat and sturdy walking shoes for hiking in the forest. PacifiCorp will have 2 vehicles for transportation of up to 4 additional passengers.

FINAL Meeting Notes
Lewis River License Implementation
Terrestrial Coordination Committee (TCC) Meeting
May 9, 2018
Merwin Hydro Control Center & Field Tour

TCC Representatives Present: (9)
Ray Croswell, RMEF
Bill Richardson, RMEF
Kendel Emmerson, PacifiCorp
Summer Peterman, PacifiCorp
Kim McCune, PacifiCorp
Peggy Miller, WDFW
Eric Holman, WDFW
Erik White, Cowlitz Indian Tribe
Amanda Froberg, Cowlitz PUD

Guest (2)
Joe Berry, Chilton Logging
Jeff Boyce, Meridian Environmental

Calendar:

June 13, 2018	TCC Meeting & Field Tour	HCC

Assignments from March 14, 2018	**Status**
Emmerson: Create high-country model of big elk use areas and a 10-15 year plan for silviculture management for TCC review.	**In Progress**

Assignments from October 11, 2017	**Status**
Emmerson: To develop a hunting access map for PacifiCorp website that shows closed or restricted hunting areas, roads, and gates.	**In progress**

Parking Lot Items	**Status**
WDFW: In regards to 10.3.3, Matching Funds Eagle Island Project the TCC would like a 1-2-page progress report of project status with photos after the grant term expires (12-31-2017).	**WDFW to provide a progress report November 2018**
Emmerson/McCune: Contact PacifiCorp's properties department to discuss further TNC detail and report to the TCC at the May meeting.	**In progress**
Reynolds/White: Schedule a conference call with appropriate parties specific to the TNC Conservation Easement.	**Site visit pending June 2018**

Kendel Emmerson (PacifiCorp) called the meeting to order at 9:05am. Emmerson reviewed the agenda and asked the TCC if there were any changes/additions. No additions were requested.

The TCC reviewed the April 11, 2018 meeting notes and no changes were requested. The meeting notes were approved without change at 9:15 a.m.

Public Comment Opportunity:
None

Land Acquisition Update (CONFIDENTIAL)
Appraisal and other survey work should be scheduled to be completed by October 31, 2018 and review of the scope of work is in process. Bids to go out for all services soon. Phase I environmental and pulling title is still needed.

Additional detail around this topic is considered confidential and proprietary and not for public viewing.

Study/Work Product Updates
E-bikes – Summer Peterman (PacifiCorp) provided a cursory review of a memo emailed to all TCC Representatives, May 4, 2018 that provided considerable detail regarding e-bike (eMTB) regulations for Washington, US Forest Service, Bureau of Land Management and a few private landowners. See **Attachment A** for further detail. Peterman noted that most agencies and landowners currently consider e-bikes as motorized vehicles. The Department of Natural Resources, State Parks, and Forest Service have strict restrictions and allow e-bikes on specified trails/paths only. Weyerhaeuser and Hancock currently do not allow e-bikes on their lands. Peterman also expressed that nearly every state has varying motor rules in place so no industry standards at this time across states. The TCC discussed concerns over ability to regulate, that over ½ of e-bikes are homemade, and governors are removed to increase its speed.

The TCC agreed that an e-bike is a motorized vehicle and its use will not be allowed on Lewis River WHMP lands. Local law enforcement will immediately be notified of this decision.

Lower Hanley Curry Meadow
Emmerson informed the TCC representatives in attendance that PacifiCorp will not be turning over Lower Hanley Curry Meadow due to prohibitive survey costs. It is possible; however, that a spring mowing can be completed if the meadow is dry enough.

The TCC agreed that it will continue its review and adaptive management to determine how to proceed long term.

Higsly I and II (MU 15) and 2018 WHMP Budget
Emmerson provided a cursory review of the May 2, 2018 Memorandum outlining the proposed 2018 timber harvest (Higsly I and Higsly II) and the revisions to the Lewis River WHMP 2018 budget (see **Attachment B** for more detail). Higsly I & II were proposed for the 2018 WHMP Plan for the following reasons:

- It will be cost effective to combine with the other scheduled timber harvest operations in MU 14 and 15 in 2018 reducing the cost of mobilization and harvest compliance.
- Northern Goshawks survey was completed in 2017 so this will complete two consecutive years.
- Potential to block long standing All-terrain vehicle (ATV) trespass from private lands to the east.
- Opportunity to provide effective management in some of the densely-stocked Douglas-fir stands from PacifiCorp's earlier management in the 1980's.

Emmerson noted that it appears Higsly II was harvested in 1984 during the same time as Higsly I according to certain documents located during PacifiCorp research. The proposed estimated WHMP cost for Higsly I & II is $13,500. This amount will be covered in the 2018 WHMP budget using the funds allocated for restoring Lower Hanley Curry Meadow that was cancelled due to prohibitive survey costs.

The TCC approved the proposed Higsly I & II as outlined in the May 2, 2018 memorandum.

DNR road Use Permit Funds
The DNR will cut the trees in the permitted areas, take them to the mill and pay PacifiCorp. The funds (approximately $4,000) will roll into the 10.8.5.5. Mitigation for Impacts on Wildlife tracking account to be used on WHMP lands as agreed to by the TCC Representatives.

Agenda items for June 13, 2018

- Review May 9, 2018 Meeting Notes
- Land Acquisition Update (Confidential)
- Study/Work Product Updates
- Orchard in MU 11 Discussion
- Tour of oak site; details to be determined

Next Scheduled Meeting

June 13, 2018
Location: HCC

Attachments:

- May 9, 2018 Meeting Agenda
- **Attachment A** – E-bikes and eMTB Rules and Regulations email to TCC, May 4, 2018
- **Attachment B** – Proposed 2018 timber harvest (Higsly I and Higsly II) and the revisions to the Lewis River WHMP 2018 budget, May 2, 2018
- **Attachment C** – Devil's Backbone Management Unit; Preliminary Patch Cut Treatment Location
- **Attachment D** - Pre-commercial thinning for wildlife vs forestry in Management Unit 37 & Elk Potential Map

Tour Safety Briefing
Emmerson informed the TCC tour attendees that we are headed to tour Devil's Backbone, Unit 37 & 39. Watch for tripping and overhead hazards and ticks are prevalent. No hard hats required.

Depart for Field Tour – 10:10am, pictures included at the end of these meeting notes
Amanda Froberg (Cowlitz PUD) provided a management unit map to assist the TCC attendees with the visual of the recommended patch cut treatment in the Devil's Backbone Unit (**Attachment C**). The yellow circles on the map indicated the ¼ & ½ patch cuts laid out in 2013. The purple line denotes an approximate 5.5 acre patch cut, however, the PUD and its consultant, Meridian Environmental, is recommending the area in light blue polygon to maximize sunlight for an approximately 5-acre opening.

Devil's Backbone Management Unit

Cowlitz PUD Devil's Backbone Management Unit

Cowlitz PUD Devil's Backbone Management Unit – Proposed Patch cut

Devil's Backbone Stand Characteristics and Management Guidelines

Estimate of existing stand characteristics

Per Acre Stand Attributes	2013 Random Plots	2013 Patches
Smallest Diameter Recorded	8 inches	4 inches
Largest Diameter Recorded	20 inches	20 inches
Trees per Acre (all diameters)	188	320
Trees per Acre greater than 15" dbh	52	41
Trees per Acre greater than 18" dbh	11	5
Basal Area per Acre	195 sq. ft.	227 sq. ft.
BF Volume per Acre	31,000 bf	37,300 bf
Quadratic Mean Diameter	13.8 inches	11.4 inches
Relative Density	52.5	67.3

Average Stand Height = 95 feet

Species Mix: 80% DF and 20% WH

Growth Estimate (from 2003 data): 2.5-3 inches diameter growth per decade

Total harvest of 5-acre patch (based on 2013 random plots)

Stand Attribute	
Total number of trees	940
BF Volume	155,000

Forest Management Guidelines

1. Retain all existing snags greater than 15 inches DBH, where feasible considering logging safety.
2. Retain all western red cedar and cottonwood, where possible.
3. Young mid-successional guidelines
   a. Combination of snags and green recruitment trees of 8 per acre
      i. Snags greater than 20 inches DBH
      ii. Green recruitment trees greater than 15 inches DBH
   b. Create, or retain, 4 logs per acre, greater than 24 inches diameter and 50 feet long.

The TCC suggested Froberg apply for certain RMEF grants monies this year to offset some of the expenses for seeding and scarification, etc. to more effectively create a meadow type habitat. PacifiCorp indicated that if the PUD were a recipient of RMEF funds the matching funds could come from the Settlement Agreement 10.3.3 as indicated below:

10.3.3 Contribution of Additional Matching Funds. In addition to the contributions made under Section 10.3.1, beginning 18 months after Issuance of the New License for the Yale Project or Swift No. 1 Project, whichever is earlier, PacifiCorp shall match the contributions of local, state, and federal agencies, and other persons or organizations, made for the purposes of this Section 10.3, in an amount not to exceed $100,000 per year, and not to exceed $500,000 in any ten consecutive years. Any Party may propose a source of matching funds under this subsection. If and only if a commitment of funds is made by a party other than PacifiCorp, for acquisitions of Interests in Land or for implementation of habitat enhancement projects approved by the TCC, PacifiCorp shall provide matching funds within the limits set forth above at closing of the real estate transaction; no fund will be created. The TCC will identify Interests in Land for acquisitions or identify habitat enhancement projects to be funded with matching funds, and PacifiCorp shall execute approved acquisitions and implement approved enhancement measures.

Cowlitz PUD Devil's Backbone Management Unit – Proposed Patch cut

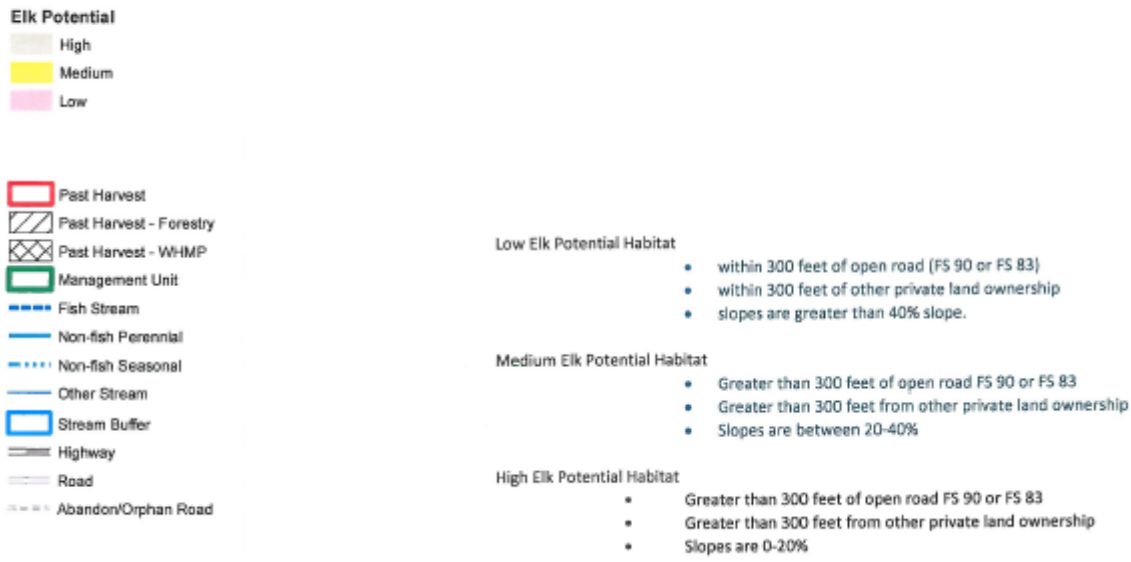
Cowlitz PUD Devil's Backbone Management Unit – Proposed Patch cut

The TCC agreed to the proposed approximate 5-acre patch cut as illustrated in Attachment C – blue polygon. The TCC further agreed to reduce the WHMP guidelines of leaving a combination of snags and green recruitment trees of 8 per acre to 2 per acre leave trees at the edge of the patch cut to create as large of an opening as possible.

<12:20pm Working Lunch>

Review Pre-commercial thinning (PCT) for wildlife vs forestry in Management Unit 37 & Elk Potential

Emmerson provided a map for TCC review illustrating elk potential habitat in Unit 37 and rated it High, Medium and Low as indicated in the key below. See **Attachment D** for further detail. These areas were further delineated into a forestry or WHMP polygon based on features that should be easily discernable from the ground. The forestry polygon would be based on low elk habitat potential and would be managed with more traditional forestry practices, whereas the WHMP polygons are focused on the medium an high elk potential areas and will implement WHMP PCT practices.



Management Unit 37; Pre-commercial thinning

This 013702CC A 32 acre timber harvest that estimated 16 years old trees. This area was acquired in 2017 and with an estimated 400 trees per acres. To implement WHMP PCT methods to reduce the trees to 250 per acre is costing as much as 4 to 6 times more than a typical WHMP timber harvest area.

Management Unit 39 0730901CC

The TCC agreed to let 013702CC grow until it is merchantable and then clearcut to start over implementing WHMP practices. This will be approximately 15-20 years before it can be clearcut. The TCC also looked at 11-year-old stand in 073901CC that is probably just past the age to be effectively PCT. The TCC recommended using an adaptive management approach and use a variety of prescriptions. Some recommendations included

- Evaluate everything 9+years to see if they can effectively be PCT or should be allowed to grow to harvest.
- For stands less than 9 years thin heavier than traditional forestry. Do a query from tree age 5-8 within MU 33-39 to see what can be completed on these to WHMP habitat.
- All stands greater than 8 years age will be evaluated to see if they can be effectively PCT or should be let go to grow to harvestable size as soon as possible.
- Schedule a site visit to Units 37 & 39 and develop a plan with the TCC to address these concerns.

In the end it was noted that due to the variability of the stands and future potential timber harvest that this needs to be evaluated further and another site visit will be coordinated in July, 2018.

Cougar Quarry for Potential Ash Deposit Site

After a tour of the Cougar quarry today, the TCC agreed this area is the best location for the Swift Drift Removal ash deposit. The TCC approved moving forward if the Washington Department of Ecology approves.

Adjourn and return to HCC – 2:30pm

Tree Mushroom

Northern Red-legged Frog

McCune, Kimberly

From: McCune, Kimberly
Sent: Friday, May 04, 2018 12:07 PM
To: Amanda Froberg; Amelia Johnson; Bill Richardson; Bob Nelson; Chartier, Neil - FS; Emmerson, Kendel; Eric Holman; Erik White; James H Malinowski; John Clapp; Mariah Stoll-Smith Reese; Michelle Day; Nathan Reynolds; Olson, Todd; Patrick Lee; Peggy Miller; Peterman, Summer; Ray Croswell; Ruth Tracy; Steve Manlow; Tim Romanski
Subject: RE: E-Bikes and eMTB Rules and Regulations
Attachments: Hennings_2017_Final_Recreation Ecology Literature Review.pdf; E-Bike-Law-Handouts_WA_LR_Revision_3292018-1.pdf

Hello TCC,

Here is a "brief" summary of the E-Bike (eMTB) regulations for Washington, US Forest Service, BLM, and a few private land owners. In addition, I've also included some concerns that need to be addressed. E-Bikes have become a very hot topic and likely to be an evolving issue as technologies and the popularity of electric assisted bicycles increase. It is likely we will be revisiting this topic again as more studies are completed and policies change. Most agencies and land owners consider e-bikes as motor vehicles and allow them on paved roads, paths, and designated Off Road Vehicle (ORV) areas. I attached handouts and links I used for reference (thanks to Ray for several of the links!).

WA Regulations:
The law generally treats e-bikes more like bicycles on pavement and more like motorcycles on natural surfaces.
SB 6434 classifies e-bikes as bicycles, as long as its power output is no more than 750 W, it has a saddle, includes fully operative pedals, and meets the criteria of the following classes:

Class 1: E-assist only while pedaling, with a maximum speed of 20 mph.
Class 2: Can be propelled solely by the motor, with a maximum speed of 20 mph.
Class 3: E-assist only while pedaling, with a maximum speed of 28 mph, and has a speedometer.

Required prominent labeling for all e-bikes containing the classification number, top assisted speed, and motor wattage.

1) Road, Bike Lanes and Paved Trails – Class 1 and 2 e-bikes are allowed on roads, in bike lanes and on paved trails. Local and state jurisdictions may restrict or limit their use.
2) Natural Surface Trails- e-bikes are not allowed on natural surface trails, unless signed or stated open by the managing jurisdiction.

State Parks allow e-bikes but the DNR or Federal Forest Service does not, unless otherwise specified.

US Forest Service on disability: "Any device that is both designed solely for mobility for a person with disability and which is suitable for use in an indoor pedestrian area may be used anywhere for travel is allowed. E-bikes are not solely designed for individuals who have mobility impairments and their suitability for indoor use would be highly questionable. Therefore, e-bikes do not qualify for an exception and my only be used where the motor vehicle use maps allowed that use by all people. An e-bike remains a motor vehicle regardless of who is using it. It is essential that exceptions to TMR (Travel Management Rule) designations not be made".

Weyerhaeuser and Hancock are treating all e-bikes as motorized vehicles to reduce complicated management issues.

Concerns:

1) Spread of invasive species: e-bikes (eMTB) can go further and therefor able to disperse seeds further.
2) Increased wildlife disturbance (Hennings 2017).
3) Hard to distinguish between classes of e-bikes for the purpose of enforcement. According to a 2014 study completed by PSU, 52% of e-bikes were bought as bicycles and motors were installed at home making it impossible to define and regulate.
4) Several states have a higher maximum power output of 1,000 watts or greater (1.34 horsepower), which is above the 750-watt (1 horsepower) limit set for WA. There is a potential that e-bike manufacturers can produce non-standard e-bikes that may or may not be legal in WA. Labeling is easy to remove and mislabel.
5) Increases individual's ability to pack in supplies and gear which may be left behind after use, may be used to build and/or maintain new trails, and/or cut down trees.
6) Increases likelihood of traffic on unsanctioned trails and ROW's.
7) Increase in traffic in remote areas.
8) Increased need for surveillance and enforcement.

The WHMP goal 15.2.1 is to *minimize disturbance to wildlife and protect their habitats while managing access for non-motorized recreation, which includes legal hunting and fishing*. As of now, the majority of agencies are defining e-bikes as motorized vehicles.

IMBA Trail Use and Management of Electric Mountain Bikes: Land Manager Survey Results
http://b.3cdn.net/bikes/8834549e2b0ec018d0_qum6b48z6.pdf

BLM e-bike regulations:
flagstaffbiking.org/wp-content/uploads/2011/03/E-Bikes-on-Public-Lands-BLM-Field-Going-Notification-July2015.pdf

US Forest Service:
flagstaffbiking.org/wp-content/uploads/2011/03/20150929EBikesBriefingPaper.pdf

WA State Legislature; e-Bikes
http://app.leg.wa.gov/Rcw/default.aspx?cite=46.04.169

WA House Bill Report
http://lawfilesext.leg.wa.gov/biennium/2017-18/Pdf/Bill%20Reports/House/6434-S.E%20HBR%20APH%2018.pdf

National Institute for Transportation and Communities
NITC Regulation of E-Bikes in North America

Summer Peterman
Wildlife Biologist
PacifiCorp
825 NE Multnomah, Suite 1500
Portland, OR 97232
(503) 813-5323

PACIFICORP | Pacific Power
Rocky Mountain Power
PacifiCorp Transmission

MEMORANDUM

DATE: May 2, 2018

TO: Terrestrial Coordination Committee

FROM: Kendel Emmerson, PacifiCorp Certified Wildlife Biologist®

SUBJECT: Proposed 2018 timber harvest (Higsly I and Higsly II) and revisions to Lewis River Wildlife Habitat Management Plan (WHMP) 2018 Budget

The Terrestrial Coordination Committee (TCC) attended a site visit on April 11, 2018 to Management Unit (MU) 15 to review the proposed Higsly I (841523 CT an 11.50 acre commercial thin) and Higsly II (841523CC a 5.89 acre clear cut). Both Higsly I and Higsly II were proposed following the submittal of the 2018 Annual Plan for the following reasons:

- It will be cost effective to combine with the other scheduled timber harvest operations in MU 14 and 15 in 2018 reducing the cost of mobilization and harvest compliance.
- Northern Goshawks survey was completed in 2017 so this will complete two consecutive years.
- Potential to block long standing All-terrain vehicle (ATV) trespass from private lands to the east.
- Opportunity to provide effective management in some of the densely-stocked Douglas-fir (*Pseudotsuga menziesii*) stands from PacifiCorp's earlier management in the 1980's.

Higsly I was logged in March 1984 and was described as dog-hair red alder (*Alnus rubra*) prior to harvest. The stand was planted in May 1984 with 640 Douglas-fir seedlings per acre. Five years after being planted, the stand was described as 15 feet tall and in 1991 the recommendation was to commercially thin the stand in 2005. The stand may have been pre-commercially thinned (PCT) in 1990, but records only confirm that it was recommended not that it was completed. In 2003 the stand was PCT with a hack and squirt method to leave the thinned trees standing.

Higsly II is a red alder stand that has no record of prior timber harvest activity under PacifiCorp's ownership. However records show that this area had significant blow down following a wind storm in the winter of 1983/1984, so these red alders may be the regeneration following this storm. During the April 11 meeting the TCC recommended that Higsly II be replanted with red alder and mix of other deciduous species such as black cottonwood (*Populus balsamifera L.* ssp. *Trichocarpa*), bigleaf maple (*Acer macrophyllum*), cascara (*Frangula purshiana*), bitter cherry (*Prunus emarginata*), and dogwood (*Cornus nuttallii*).

Proposed estimated WHMP cost for Higsly I and II is $13,500:

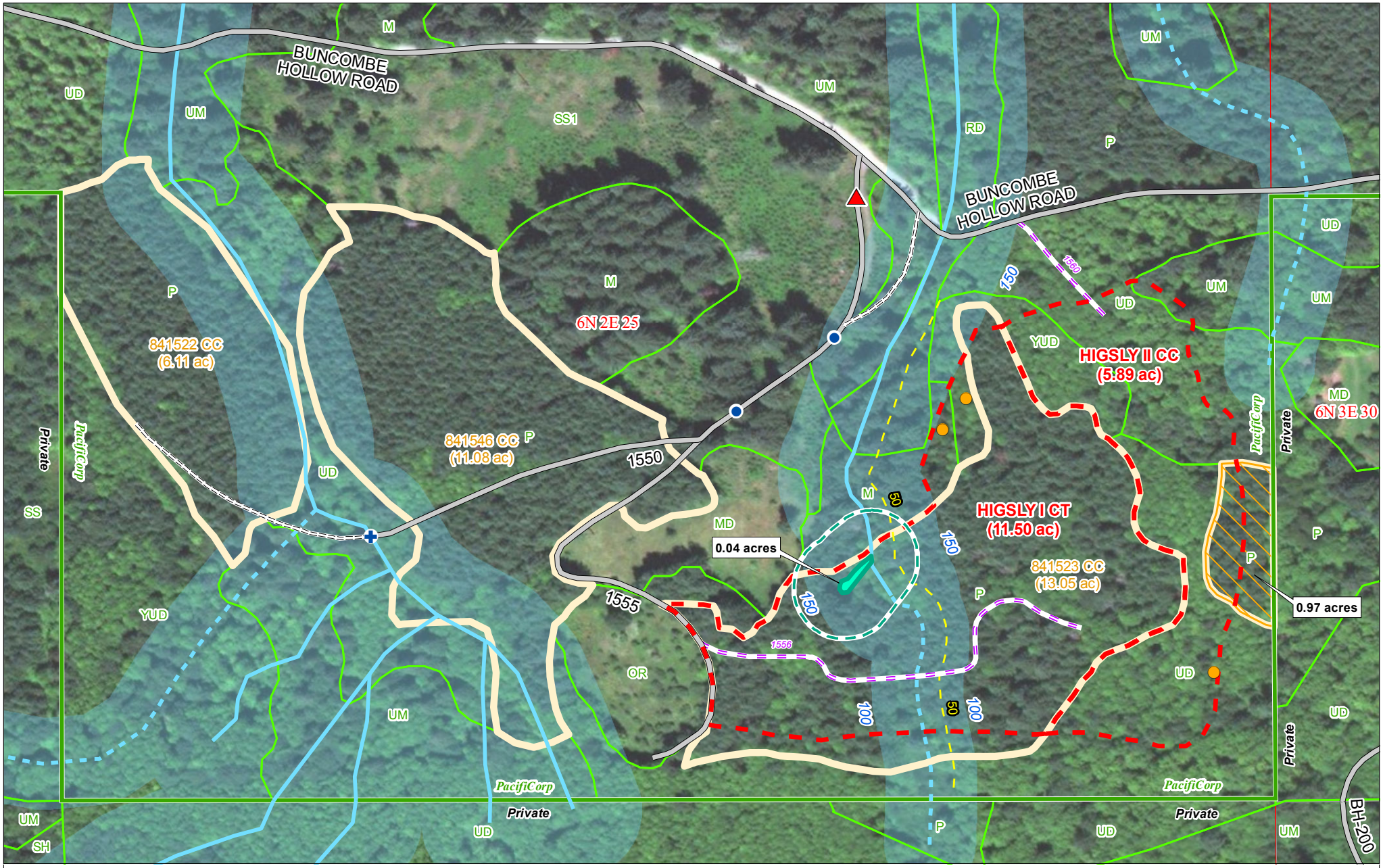
- Grass seeding (Primarily Higsly II, but disturbed areas in Higsly II will also be grass seeded) = $1500
- Scarification/piling (Higsly II only) = $9,000
- Covering burn piles with plastic (Higsly II only) = $2000
- Burning piles (Higsly II only) = $1000

This amount would be covered in the 2018 WHMP budget by using the funds allocated for restoring Lower Hanley Curry Meadow that was cancelled due to prohibitive survey costs.

Current cover:forage (C:F) for MU 15 is 79:21 and the goal is 70:30. Following all the 2018 proposed harvests in MU 15 the C:F is expected to be 74:26. However, the harvest of Higsly I and Higsly II will have no effect on C:F ratio. This is because Higsly II will change from Upland Deciduous (UD) to New Clearcut (SS1), both of which are classified as forage, and Higsly I will change from Pole Conifer (P) to Pole Conifer-thinned (P-t), both of which are classified as cover.

The following WHMP goals and objectives will be achieved through Higsly I and Higsly II:

> Forestland Goal to promote forestland species composition and structures that benefit wildlife and provide an appropriate mosaic of big game hiding cover and forage.
>
> Forestland Objective C that at a Management Unit level, promote forest habitat diversity for wildlife by increasing or maintaining minor native tree species (e.g. cottonwood [*Populus* sp.], big-leaf maple [*Acer macrophyllum*], western red-cedar [*Thuja plicata*] composition where appropriate site conditions exist over the life of the licenses.
>
> Public Access Goal to minimize disturbance to wildlife, protect their habitats, while managing access for non-motorized recreation, which includes legal hunting and fishing, and activities associated with the implementation of the WHMP.



WHMP - Unit 15

2018 Proposed Harvest Areas HIGSLY I and II

04/10/2018
U:\Projects\Hydro\Lewis\Harvest\Unit 15\Higsly Aerial Map.mxd

- Proposed Harvest
- Past Harvest
- Gate
- Road
- Abandon Road
- Proposed Road
- Leave Tree
- *Special Management Area*
- Section
- PacifiCorp Land
- Ditch Culvert
- Stream Culvert
- Non-fish Perennial Stream
- Non-fish Seasonal Stream
- Shore/Stream Buffer
- 50 ft Stream Buffer (RMZ)
- Wetland
- *Wetland Buffer (100 feet)*
- Vegetation Cover

N W E S

0 100 Feet

1:3,400

PACIFICORP

Higsly I (Currently THA 841523CC is proposed to be commercially thinned in 2018)

Here is historical reference on this THA:

•Management units were renamed sometime between 1984 and 1990. MU 15 was formerly MU 8 and this harvest identification was 840802, which included the current 841522CC, 841546CC, and 841523CC.

•840802 is originally described as 58 acres but the current THAs combine are only 30 acres.

•Logging was completed in March 1984 and trees were planted in May 1984.

•The stand prior to 1984 harvest was described as doghair alder.

•Stand was restocked with 640 Douglas fir seedlings per acre.

•In November 1989 trees were described as 15 feet tall.

•The upper corner wasn't planted in 1984 and may have been re-planted in 1991.

•PCT was scheduled for 1990, but there is no record of it occurring. The March 1991 notes state PCT is planned for 15' spacing and/or 200 TPA, however annual reports at that time do not provide enough detail to determine if it was actually completed. Trees at that time were PCT with EZ-Ject injection method which was discontinued because it had variable results.

•1991 notes recommend commercially thinning the stand in 2005.

• Our records indicate last PCT was 2003. Unfortunately there is no 2003 annual report to confirm it was completed.

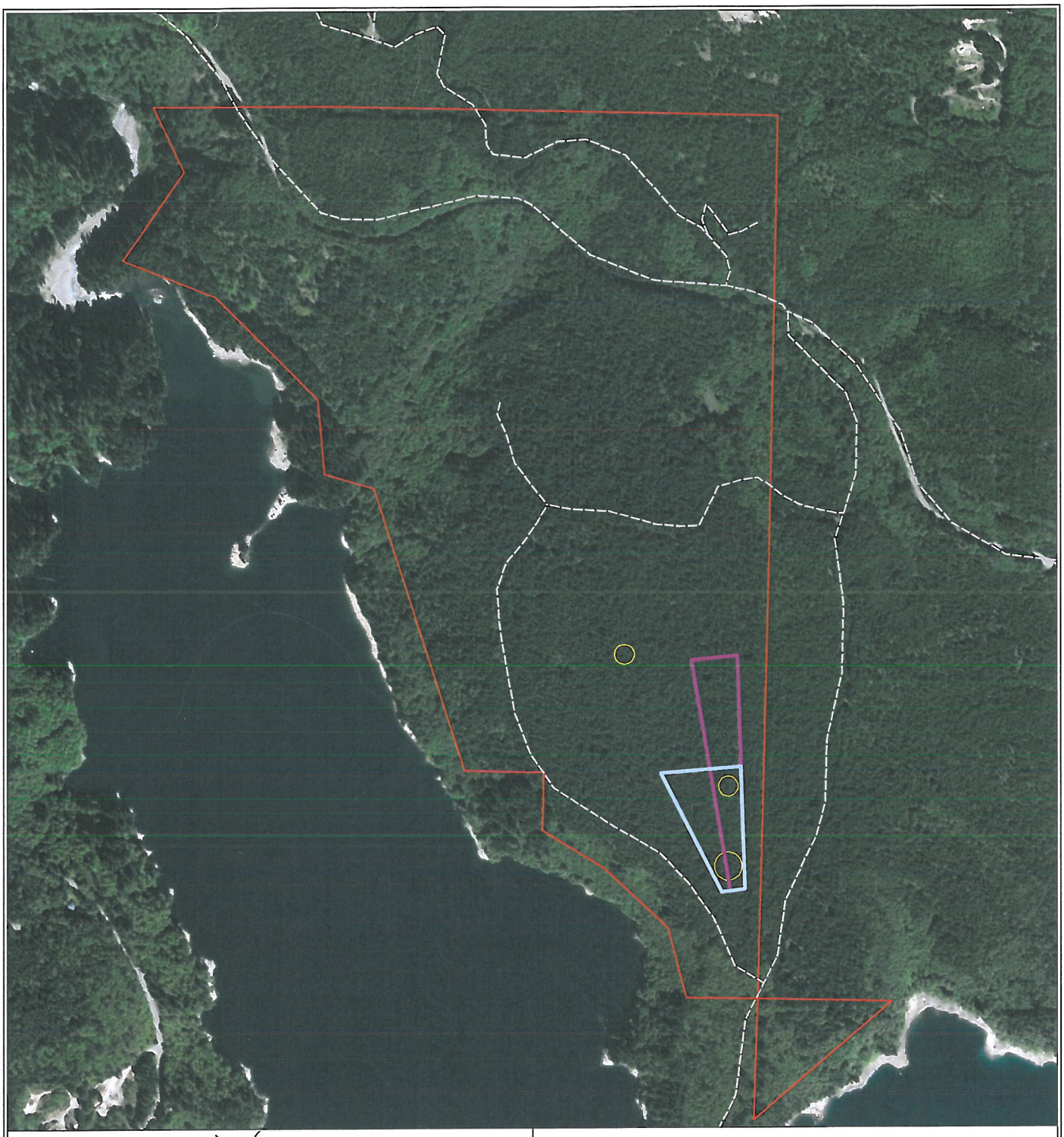
This a forestry objective from the 1990 SOP……..

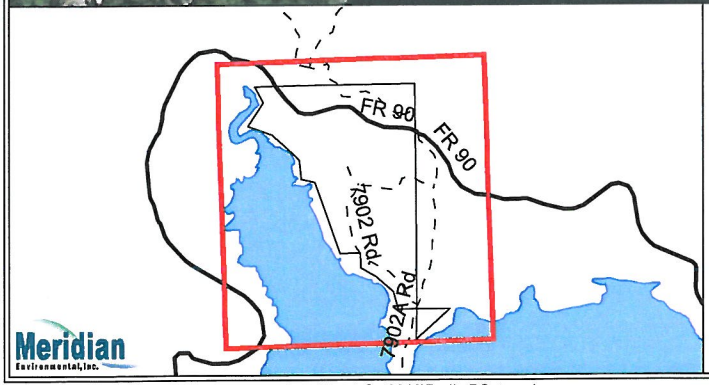
Alder

1. Treat 5% (56 ac) of alder each year (WMP, p. 44).

2. A minimum of 50% of alder stems in a stand should be cut. All cottonwoods and bigleaf maple should be retained (WMP, p. 44).

3. Ninety percent of the alder areas may be planted to low density Douglas-fir seedling (WMP, p. 45) (i.e., 10% should not be converted to fir).





COWLITZ PUD

Swift No. 2 Hydroelectric Project
FERC No. 2213

Devil's Backbone Management Unit
Preliminary Patch Cut Treatment Location

N

0 450 900 1,350 1,800 Feet

1 inch = 833 feet

Meridian Environmental, Inc.

G:\Projects\Current\CowlitzPUD\MapProjects\PatchCut2018\PrelimPCut.mxd

Published Date : 5/4/2018

Devil's Backbone Stand Characteristics and Management Guidelines

Estimate of existing stand characteristics

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Average Stand Height = 95 feet

Species Mix: 80% DF and 20% WH

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Total harvest of 5-acre patch (based on 2013 random plots)

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BF Volume	155,000

Forest Management Guidelines

1. Retain all existing snags greater than 15 inches DBH, where feasible considering logging safety.
2. Retain all western red cedar and cottonwood, where possible.
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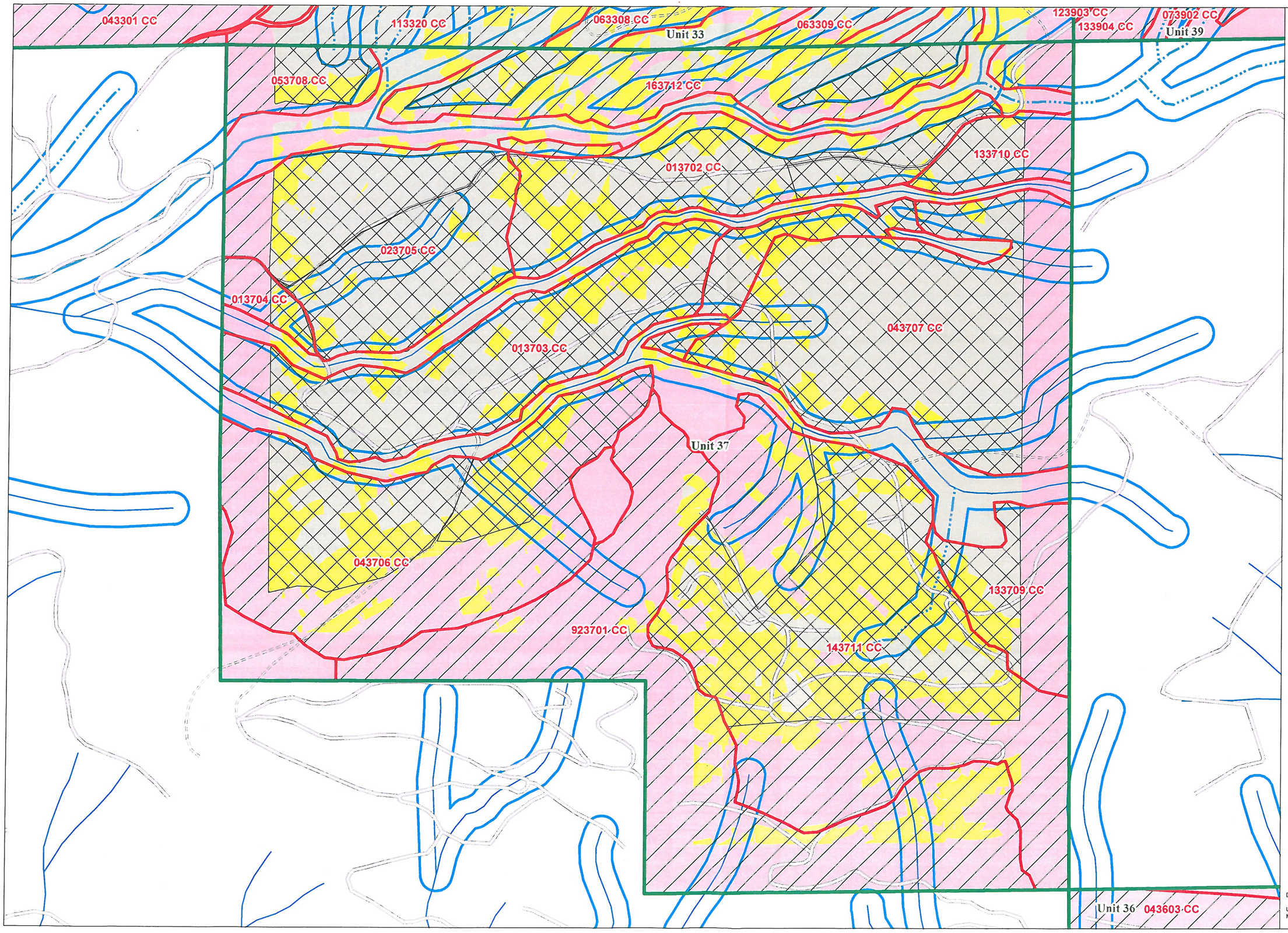
    a. Combination of snags and green recruitment trees of 8 per acre
        i. Snags greater than 20 inches DBH
        ii. Green recruitment trees greater than 15 inches DBH
    b. Create, or retain, 4 logs per acre, greater than 24 inches diameter and 50 feet long.



Lewis River

Elk Potential

SWIFT

Unit 37

Elk Potential

- High
- Medium
- Low

- Past Harvest
- Past Harvest - Forestry
- Past Harvest - WHMP
- Management Unit
- Fish Stream
- Non-fish Perennial
- Non-fish Seasonal
- Other Stream
- Stream Buffer
- Highway
- Road
- Abandon/Orphan Road

N W E S

0 425 850

Feet

1:6,600

PACIFICORP

Data are projected in UTM Zone 10, NAD83, meters

U:\Projects\Hydro\Lewis\Elk Habitat\WHMP vs Forestry Map.mxd

HARVEST_ID	UNIT	SEQUENCE	YEAR	ACRES	High	% High	Medium	% Medium	Low	% Low	Riparian	% Riparian	WHMP	WHMP %	Forestry	% Forestry
923701 CC	37	01	1992	71.44	0.11	0.16%	8.38	11.73%	54.90	76.84%	8.06	11.29%	0.00	0.00%	71.44	100.00%
013702 CC	37	02	2001	32.73	16.45	50.26%	6.53	19.94%	0.05	0.14%	9.72	29.69%	26.73	81.69%	5.99	18.31%
013703 CC	37	03	2001	39.07	22.35	57.19%	7.50	19.19%	2.22	5.68%	7.02	17.96%	36.28	92.85%	2.79	7.15%
013704 CC	37	04	2001	3.87	0.21	5.39%	0.28	7.37%	1.84	47.48%	1.54	39.78%	1.55	39.98%	2.32	60.02%
023705 CC	37	05	2002	41.49	24.31	58.59%	4.87	11.74%	3.51	8.45%	8.80	21.20%	36.54	88.08%	4.95	11.92%
043706 CC	37	06	2004	60.84	8.37	13.75%	16.01	26.32%	29.31	48.18%	7.12	11.70%	31.55	51.86%	29.29	48.14%
043707 CC	37	07	2004	63.60	36.41	57.24%	4.62	7.27%	7.84	12.32%	14.71	23.13%	51.55	81.06%	12.05	18.94%
053708 CC	37	08	2005	8.96	2.08	23.25%	1.84	20.59%	3.25	36.26%	1.78	19.83%	3.77	42.13%	5.18	57.87%
133709 CC	37	09	2013	15.12	3.71	24.51%	2.39	15.81%	7.99	52.85%	1.03	6.81%	7.04	46.57%	8.08	53.43%
133710 CC	37	10	2013	20.27	7.17	35.39%	2.45	12.07%	4.10	20.25%	6.53	32.23%	13.81	68.13%	6.46	31.87%
143711 CC	37	11	2014	96.21	11.45	11.90%	35.05	36.43%	33.14	34.44%	16.61	17.26%	53.64	55.75%	42.57	44.25%
163712 CC	37	12	2016	31.99	5.97	18.66%	4.16	13.00%	0.58	1.81%	21.27	66.49%	7.96	24.88%	24.03	75.12%
Total				**485.58**	**138.58**	**28.54%**	**94.08**	**19.37%**	**148.72**	**30.63%**	**104.19**	**21.46%**	**270.43**	**55.69%**	**215.15**	**44.31%**

Low Elk Potential Habitat

- within 300 feet of open road (FS 90 or FS 83)
- within 300 feet of other private land ownership
- slopes are greater than 40% slope.

Medium Elk Potential Habitat

- Greater than 300 feet of open road FS 90 or FS 83
- Greater than 300 feet from other private land ownership
- Slopes are between 20-40%

High Elk Potential Habitat

- Greater than 300 feet of open road FS 90 or FS 83
- Greater than 300 feet from other private land ownership
- Slopes are 0-20%