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This is an update to the 2002 Management Plan for Wescliffe Common Forest and recommendations for the future.

Implementation of vegetation plan for the Wescliffe Common Forest Strip (CFS)

2002: Most of brush generated by the 2001 view cutting was lopped to short lengths and flattened to the soil surface by a resident volunteer party which Robert Sweet directed. We also half buried numerous existing logs at angle to the slope (check dams) both on the slope with push fill and on the old road along the north boundary.

2002: Herbicide sprayed poison oak (*Rhus diversiloba*) across whole length of CFS.

2003: Professional crew planted conservation grade nursery stock on northern and central parts (about 80 %) of the CFS.

2003: Residents do some watering (sprinklers) of plantings.

2004: First thinning of canopy (of approx. 1/3 of trees) delayed at my suggestion due to the multi-year drought.

2005: Supplemental planting along upper slope in central part of CFS.

2006: First thinning of canopy trees (marking and felling work performed by Robert Sweet).

2008: Supplemental (i.e. not in original plan): Below Wescliffe lots #12, #11, and #10, selective marking of maple stems for removal (marking by Robert Sweet; felling by contract with owners of lots #12, #11, and #10).

2009: Second thinning of canopy trees (marking work done by Robert Sweet; felling contracted out).

2011: Selective cutting of young (up to 20 feet tall) Douglas firs on upper slope.

2014: Third thinning of canopy trees (marking conducted by Robert Sweet; felling contracted out).

2014: Additional tree planting (contracted out).

Results:

- 1) The initial brush treatment and log check dam building combined with proper chopping of most new brush has provided many tons of chunky and fine wood debris to the soil surface. Much of this is now well rotted and has greatly reduced soil erosion and simultaneously reduced fire hazard. Finally, these tons of ground-hugging dead wood have created a complex surface texture which has trapped many tons of fallen leaves on site. By collecting and rotting in place these fallen leaves, along with the rotting wood have vitalized the soil with rich humus. Most of the push-fill slopes now have a spongy, dark organic layer in place of the grey, compact, almost sterile fill soil.
- 2) The spraying for poison oak was only of short term effectiveness. The species is at least as abundant in 2016 as it was in 2001.
- 3) Planted tree and shrub survival was fair in 2003 and poor in 2005 and good in 2014. Growth of surviving plants (2003 and 2005) has been slower than expected thus delaying slope-holding benefits. Never-the-less, the planting labor for the main 2003 work was of good quality (as determined with a post-mortality check by Robert Sweet). The extremely high losses of shore pine (*Pinus contorta*) and of mountain hemlock (*Tsuga mertensiana*) were likely due to starch exhaustion in the roots of the young trees at time of planting. Other species planted seemed to be of good quality. But the prolonged drought of 2001-2005

reduced survival rates of these species too somewhat and of their growth rates considerably. Note, at least two residents, one at the top and one at the bottom of the slope, have done significant planting of natives on their adjacent land. Many of these plants have grown quite well probably due to conscientious watering.

- 4) In sharp contrast to point 3) most of the CFS has experienced a large increase in biomass of naturally seeded native trees and shrubs. This has been particularly rapid since the first tree thinning in 2006 improved light nutrition to the forest floor. Most of these natural seedlings likely were light-suppressed small plants that had slowly established good root systems in the 1990s and, in spite of the drought, were primed to take advantage of the increased sunlight created by selective tree cutting.
- 5) The minority of the CFS that remains poorly stocked today is in 2 areas: a) The bigleaf maple dominated vale below lots #12, #11, and #10, and b) several blackberry patches along the eastern boundary that were never sprayed or cleared per the 2002 plan. Still, several Wescliffe 1 residents have shown initiative by removing all or part of the briar thickets on their own land along the CFS boundary as the 2002 report encouraged residents to do.

Recommended actions for the future:

- 1) Get serious about removing the invasive blackberries. Some very good work below Wescliffe1 lot #9 and part of #15, #16 and #17 has already happened. Even where not planted, I have noticed substantial growth of some native shrubs filling voids opened by the missing blackberry. But the southern part of lot #16 and adjacent CFS land below #16 and #17 remains choked with briars. Same for a CFS patch next to #19 and for the very steep, more extensive belt of berries below #12 and #11. Native shrubs have been making little progress under the shade of these briar patches. The soil here has not improved, erosion has not slowed. The soil is still grey, humus poor, and compact just as it was 15 years ago. Removal of these short belts and patches of briars will alleviate erosional debris flows which every rainy season gets transported down slope where, fortunately unlike before 2002, it now gets trapped and deposited amid the decaying wood and rich, spongy, humus rich soil of most of the CFS.
I recommend hand cutting of briars and compression of the chopped canes onto the ground as a mulch. This mulch will immediately give some erosion protection and will start trapping falling leaves from adjacent trees to reinforce the mulch. Ideally, some small diameter logs (like fallen fir limbs) would further stabilize this layer. Of course, the blackberry root crowns will re-sprout. Several rounds of June- July spot spraying should complete the kill. Yes, planting shrubs like snowberry and ocean spray is great, but the only two essential steps are kill the existing briar and create an organic mulch. The soil will immediately begin to enliven and Nature will gradually seed in shrubs to re-inforce the few already there.
- 2) Planting to increase the low percentage of shrub and small tree cover in the vale below #12, #11, #10, and the north end of #9. This area of solid big-leaf maple comprises about 10-15% of the CFS. Plantings have almost completely failed here. Neither has Nature added many natural seedlings (I estimate 10-20% native shrub cover). The most recent cutting of the vale bottom with its multi-stemmed, repeatedly cut to the ground maple stump trees is a 1/3 acre patch cut (i.e. a tiny clearcut). Not ideal but the ground is almost flat; the erosion here is coming from the steep briar belt above (see rec. 1). The older chopped maple slash against the ground is crumbly with rot and humus is rapidly forming. Unlike the briar slope above, the soil is spongy, water absorbent and alive, like most of the CFS now. However, this cycle of little shade then excess shade (sprouts grow, get tall with huge leaves) then back to little shade has conspired against the forming of a healthy understory layer like what is happening elsewhere on most of the slope. Also, the rapid growth of Maple wood biomass which is then cut means that too much wood is lying on the ground for natural soil rot to keep up with.
 - After the briars above are gone, hoses will easily be able to get water to a new planting.
 - In Fall 2018 or March 2019 plant 400 to 500 seedlings (hazel, ocean spray, Snowberry and Rocky Mountain maple (*Acer glabrum*) at about 6 foot spacing. Planting of most of the site will be complicated by the excess of dead wood.

- Aftercare of plants means EFFECTIVE watering: adequate depth and frequency during at least the summer of 2019.
 - Success is at least 75% survival and significant first season top growth (6+ inches)
 - Several years after successful planting, half of the partly re-grown maple stumps can be cut AND poisoned with herbicide. The contractor will need to hand drag cut stems up to 75 feet to reach non slash choked ground where these stems must be cut to 4 foot or less lengths.
 - Further cutting and poisoning of stumps will be determined later as justified by progress.
- 3) Every two to three years very light forest thinning (i.e. 2-3 large trees per acre cut as well as selective cutting of small (under 20 feet) volunteer Douglas fir as a general maintenance of views and improved light penetration to the expanding healthy understory.

Tree Topping vs. Nodal Crown Reduction

Though the issue of tree growth diminishing the views of a number of Wescliffe 1 homeowners began this process, both the original CFS management plan of 2002 and this review and update of it was never capable of or intended to fully address view loss. It cannot because as already noted; the lower 40% of the forested slope is privately owned within specific Wescliffe 2 lots. But the problem is solvable. One solution is long term replacement of existing tall Douglas fir with planted and already existing native shrubs and lower growing trees by gradual replacement as we have done for the CFS. A second solution – albeit controversial – is lower the tops of the trees. I am not referring to standard tree topping but rather to the technique known as *nodal crown reduction* (NCR). This sounds like a euphemism for tree topping. But in modern arboriculture we know now that while the first practice is frequently quite damaging to tree health, both above and below ground, the second practice adds only modest tree stress. Both involve chainsaws but there are two main differences:

- a. NCR cuts are made just above (about ½ inch) a node (i.e. a point on the tree stem with side branches or reserve buds). For a Douglas fir this means the cut must be just above a whorl of branches.
- b. NCR cuts are on 15 year old or younger stems and are, thereafter, repeated at this interval. This means the top removal cut is generally less than 6 inches in diameter and usually will not expose more than a few rings of the more rot prone heartwood. This significantly limits the wood rot potential below the cut. Also, a smaller percentage of a tree's light harvesting crown is lost than by topping. This also greatly reduces the chance of hindering root growth.

NCR is a reasonable technique for use in view clearing situations, especially for previously topped Douglas fir possessing multiple re-grown tops. This technique must be performed by arborists who are knowledgeable and experienced in NCR.

We have used very little topping of any variety on the CFS as part of implementing the 2002 plan. Any version of topping is less effective than forest thinning at getting light to the forest floor and undergrowth invigoration with light has been a guiding principle in the CFS vegetation management plan. But it is an option for long term management of existing, long-lived trees where both slope stability and views can be maintained. The science is more nuanced than the common view that any height reduction pruning of trees is devastating to their health and to slope stability.

Timeline of recommendations:

The main area of the CFS refers to the land north of a straight line from the end of 87th Ave Ct W going SW to the northern edge of Wescliffe 2 lot 17, minus about a fifth acre triangle of land between Wescliffe 2 lot 8 and the boundary path down to the school. Planned tree work on the triangle will be noted separately. The 15 to 20% of the CFS in the south will only have risk abatement work along the border with Wescliffe 2 lot 17. It is an area with little history of view topping work before the 2002 plan and no work during the last 15 years. Its tree cover is mostly madrone (fairly healthy) with sufficient natural light penetration to support thriving native ground cover and shrub understory.

2018

- Not season sensitive: Community work party under my supervision to cut down the residual hanging slash and bring into ground contact
- Winter: Cut down blackberries within CFS. These are in isolated patches below Wescliffe 1, lots 18 and 19 and the upper part of the landslide trace below Wescliffe 1 lots 16 and 15. On these cleared patches, place some large wood as check dams.
- Fall: Order plants. I will provide a plant list in fall when the Conservation District updates their order form.

2019

- In the main area, selective thinning for view clearance and light penetration enhancement except for the ¼ acre to be planted in 2019. Only very scattered tree removals for most of this area needed. Somewhat heavier tree removals and/or nodal crown reductions of Douglas fir in the ravine just south of Wescliffe 2 lot 9. In the south, removal of higher risk madrona along the border with the southern-most two Wescliffe 1 lots 12 and 15 where houses and/or fences are close to the boundary. I will mark all trees to be removed or crown reduced.
- Before the March planting: Blackberry will need to be removed in CFS prior to planting.
- March (planting season): Planting of 400 native shrubs and trees in the poor survival area below Wescliffe 1 lots 11, 10 and southern half of 12. In addition to this area, planting will also take place in the recently cleared blackberry thickets within the CFS. Planting stock for this part of the project will number about 150 and will include the same species as above and some low growing shrubs, snowberry and sword fern. Actual plants selected will depend on availability but will be heavy on small-statured trees like Rocky Mt. maple (if possible, otherwise vine maple) and pacific dogwood and larger stature shrubs like ocean spray and hazel. This area, approximately one quarter acre, is already adequately stocked with smaller stature shrubs, primarily snowberry. Summer irrigation is crucial to survival of the planting. At minimum, paths will have to be cut through adjacent blackberry on private land to allow water supply access for summer irrigation. The improving soil humus levels here as well as abundant slash to create protected micro sites should favor survival. I have found no poison oak in the actual planting area to complicate working conditions. However, the especially heavy slash here will make planting slower. A suggestion: If one or more of the adjacent Wescliffe 1 owners agrees, an additional 100 to 200 seedlings of shrubs that will have a mature height of 12' or lower could be ordered at the same time and planted where the large band of blackberry/ivy is now adjacent to the CFS.
- June/July: Hand spray or rouge out regrowing blackberries. Be careful of new plants.

2023

- A light selective thinning in main area of the CFS as in 2019 plus the area of the 2019 planting (cut in 2015). Some previously topped Douglas fir may be marked for nodal crown reduction. I will mark madrone for removal. For the resprouted 7' high stumps of big leaf maple in the area of the 2019

planting, two thirds will be marked for coppicing (cutting again to high stumps) so root systems can remain living and one third will be cut and herbicide treated.

- Some nodal crown reduction of previously unthinned Douglas firs in the triangular area between Wescliffe 2 lot 8 and the boundary path that leads down to the school. This is the lowest elevation corner of the CFS, ranging from 70 to 100 feet below the upper slope lip. The intent remains to not replace vegetation here with lower growing plants; instead, the goal is for these very long lived firs to be managed mostly with nodal crown reduction to keep views open.
- Summer: Monitor as needed for possible marking of higher risk trees along two southernmost Wescliffe 2 properties.

2028

- Winter: Light selective thinning of same areas as in 2023.
- Some nodal crown reduction of additional Douglas firs in the triangular area between Wescliffe 2 lot 8 and the boundary path that leads down to the school. These trees are in a band downslope 10-20 feet elevation of those reduced in 2023.
- Summer: Monitor as need for possible marking of higher risk trees along two southernmost Wescliffe 2 properties.

2033

- Very light selective thinning of same areas of the CFS.
- If called for a second round of nodal crown reduction on the Douglas firs reduced in 2023 in the small triangle between Wescliffe 2 lot 8 and the border path. I will assess the firs at the very bottom for view blocking to determine if these too should be reduced.
- In the maple area of 2019 planting, coppice half the sprouted Big-leaf Maple high stumps again. If understory vegetation layer has grown sufficiently the other half can be cut at ground-level and herbicide treated.
- Monitor as need for possible marking of higher risk trees along two southernmost Wescliffe 2 properties.

2038

- In the maple area of 2019 planting, coppice the remaining live multi-stemmed stumps.
- If needed, a very light selective thinning in the rest of the main CFS area.
- If called for, a second round of nodal crown reduction on those firs in the triangle reduced in 2028.
- A visual assessment of the nodal crown reduced trees from 2028 to see if some need repeat treatment.
- Monitor as need for possible marking of higher risk trees along two southernmost Wescliffe 2 properties.

Respectfully submitted,

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