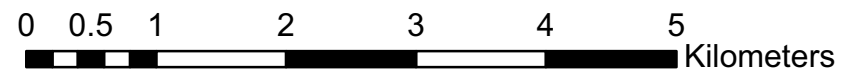


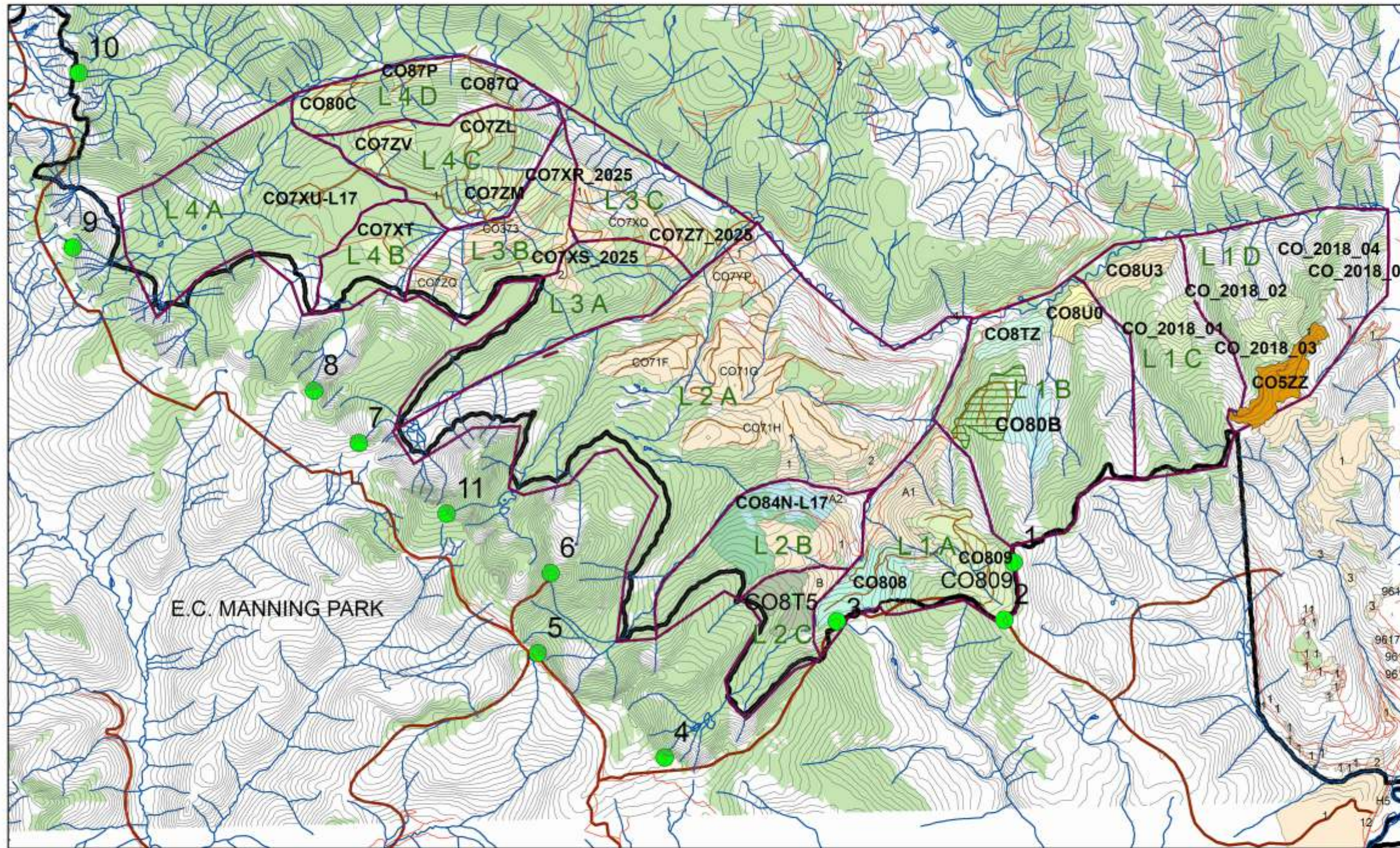
Copper 2018 - Visual Assessment

- Trim_Roads
 - CTR_Clip
 - Copper18Stopsall
 - Garrison_Proposed_Roads
 - CO808
 - CO5ZZ
 - CO_2018_01_shapefiles_dec62018
 - CO_2018_03_03_04_05_shapefiles_Dec6_2018
 - CO80B_deferred
 - Landforms2018
 - Trim_Waterlines
 - Manning_Prov_Park
 - CO8U0
 - Copper17-26
 - CO80B_Final
 - CO8U3-21
 - CO8TZ_BLK
 - L_Park Structures - Okanagan Region - Points
 - L_Park Trails - Okanagan Region - Lines
 - HarvestFten13-14
 - CO809
 - CO809-18
 - co809_co8t5_wtra
 - CO84N_BLK
 - co809_co8t5_shp
 - CO7XU-L117
- Hillshade**
 Value
 High : 254
 Low : 0



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Copper 2018 - Visual Assessment

- Trim_Roads
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- Copper18Stopsail
- Garrison_Proposed_Roads
- CO808
- CO5ZZ
- CO_2018_01_shapefiles_dec62018
- CO_2018_03_03_04_05_shapefiles_Dec6_2018
- CO80B_deferred
- Landforms2018
- Trim_Waterlines
- Manning_Prov_Park
- CO8U0
- Copper17-26
- CO80B_Final
- CO8U3-21
- CO8TZ_BLK
- L_Park Structures - Okanagan Region - Points
- L_Park Trails - Okanagan Region - Lines
- HarvestFten13-14
- CO809
- CO809-18

Value

- 0
- 0 - 10
- co809_co8t5_wtra
- CO84N_BLK
- co809_co8t5_shp

Value

- 0
- 0 - 10
- CO7XU-L17



Composite Viewshed from all Stopping Points

Report of Dr. Kenneth B. Fairhurst, PhD, RPF

The following report and image document by RDI Resource Design Inc is the culmination of a 4 year progressive visual assessment of the BC Timber Sales Copper Creek harvesting plan. The project commenced in 2014-2015 with a preliminary visual assessment, followed by a comprehensive report in December, 2017, and now concludes with this final assessment. RDI appreciates and commends the dedication and on-going participation of BCTS in its commitment to assuring the visual quality of its operations in the Copper Creek, particularly now as the previous leniency to facilitate the harvesting of beetle-infected timber at an increased rate without VQO constraints is now mainly over.

The report examines 11 elevated Stops (viewpoints) during a heli-tour along the edge of Manning Provincial Park looking into the Copper Creek drainage (Section 1). It then assesses the landscape by delineating 14 landforms, and the visual influence of existing and proposed cutblocks within each landform as seen from the various viewing opportunities (Section 2), and makes conclusions and recommendations (Section 3). The report includes maps, viewsheds, photography, visual simulations, perspective percent alteration calculations from 4 Stops, and RDI determinations.

1. Heli-tour Field Stopping Points

Eleven landings were made during the field visit on June 27 with BCTS Officers Brent Woitas and Christian Shears. RDI pre-selected the stopping points through topographic analysis, and construction of visual simulations from locations offering panoramic and feature views (e.g. cirque lakes or tarns) from Manning Park trails, or as close as possible to them. The stopping points followed a semi-circular clockwise route from east to west as indicated on the key map (p.1). The array of stops provided visual coverage of all 14 landforms and all 23 cutblocks within them as indicated in Table 1 (p. 6). The construction of individual viewsheds are inserted on each Stop page, and the composite viewshed on page 3 further assisted in the confirmation of visibility in the Copper project area from Manning Park. There were 4 stops on Bonnevier Trail (Stops 1-4); 1 stop on Fat Dog Cross Country Trail (Stop 5), 1 stop at the head of First Brother Trail (Stop 6), 4 stops on Heather Trail (Stops 11; 7-9), and 1 stop on Nicomen Trail (Stop 10). Safe landing locations were found as near as possible to the pre-selected points. We included a fly-over of the Blackwall parking lot area to confirm the lack of visibility from there into Copper Creek valley. Photo-panoramas were collected by me. Stop 2 did not allow photo-coverage due to tree screening density. The provincial park administration asks that people keep to the trails so that the delicate alpine flowers and vegetation not be crushed. The lure of proximate ridge-top panoramic views in both directions and key features such as cirque tarns likely draw unknown numbers of visitors away short distances from the trails to seek the nearby ridgelines. In addition to photography, the field stop views were also simulated using Visual Nature Studio. Distances from the trails to the Stops, ranging from 0m (on the trail) to 880m (Stop 8 with a cirque lake feature view) are shown in the following list:

- 1. 730m north of Bonnevier Trail in trees or accessed through cutblock – unlikely to receive public use.**
- 2. On 2. On Bonnevier Trail – likely treed buffer.**
- 3. On Bonnevier Trail – trail map provided by BCTS show 175m length of trail within CO808.**
- 4. 200m from Bonnevier – easy 20m climb, good ridgetop view down into Copper.**
- 5. On Fat Dog Cross Country Ski Trail – good ridgetop view down into Copper.**
- 6. At First Brother Trailhead – broad panorama into Copper and beyond – cairns.**
- 11. 615m from Heather Trail - Ridgetop with view of cirque lake below and broad panorama beyond.**
- 7. 400m from Heather – Narrow ridgetop view into distance.**
- 8. 880m from Heather – ridgetop with cirque lake (tarn) feature below in view; panorama beyond.**
- 9. 340m from Heather – narrow view into upper Copper headwaters and beyond.**
- 10. 640m from Nicomen Lake Trail - narrow view into upper Copper headwaters – unlikely visitation.**

In summary, 4 of the 11 stops were on the trails (2, 3, 5, and 6), though Stop 2 on the Bonnevier Trail is likely to remain screened. Two have scenically significant cirque lake features and panoramas off-trail (11, 8). One more stop offers additional good views into the Copper valley and beyond (4). Others provide narrower views into the Copper and beyond (7, 9). The remaining 2 stops are likely of little or no interest and unlikely to draw visitors through the trees away from the trails (1, 10). RDI has provided simulations and analyses from all of these stops in the report.

1. Landforms as related to Visual Sensitivity Units

Existing Visual Landscape Inventory (VLI) has delineated 18 Visual Sensitivity Units (VSUs) in the Copper Creek area which have an influence on visual landscape management of harvesting operations. Visual Quality Objectives (VQO) ratings were established under FRPA in December, 2003. The coverage appears to be disjointed when viewed from the elevated edges of Manning Park, appearing to have been determined from Copper Creek roads. RDI initially delineated 4 landforms incorporating the west and north sides of Copper Creek drainage. Major breaks were placed along Copper Creek and along side creeks. RDI subsequently refined the landforms for this final assessment into a total of 14 landform sub-units. The sub-unit determination was guided by a more detailed analysis of topographic breaks and drainages as viewed from the helicopter stopping points in Manning Park and was further confirmed by the production of viewsheds from each of the stopping points using ArcGIS.

There are three categories of established VQOs within the landforms: Retention, Partial Retention, and Modification. The prevailing VQO influencing 12 of the 14 landforms is Partial Retention as depicted in light green on the VQO map on the back page of this report (p. 22). Modification units, depicted in orange on the map, are found in just 2 landforms (L1D and L3B). Retention VQOs, depicted in dark green are found in 4 landforms (L2A, L2B, L2C, and L4A).

Five landforms have more than one VQO (L2A, L2B, L2C, and L3B). According to newly developed training procedures by the Ministry of Forests, Natural Resources and Rural Development (FLNRORD), these multiple VQO landforms require that each specific VQO be adhered to, if evident in the view, to ensure that the legal objectives are met.

VSUs vary in their coverage within the landforms, ranging from nearly complete coverage (L1A, L1B, L2A, L2B, L3A, L4C), to partial or minor (L1D, L3B, L3C, L4A, L4B), to none at all (L4D). Significant amounts of terrain seen from the stopping points were found to be classed as non-visually sensitive or NVS in the VLI. RDI applied a FLNRORD convention to expand the VSU boundaries to cover the now visible areas, and adopt the neighbouring VQO or VQOs for these areas.

The viewshed maps further identify and confirm the visual coverage from the coverage seen from the stopping points. The composite viewshed as seen from all stopping points is presented on page 3 of this document, and individual viewsheds are inserted on each Stop page.

Stop 1

Stop 1 is 750m north of Bonnevier Trail through closed forest presently and is unlikely to be visited unless traversing the new cutblock. All 4 landforms are potentially visible from this viewpoint with Landform 1 in the immediate foreground. The visual simulation shows CO809 as very large in the foreground (a beetle-exempt cutblock). CO8T5 is also potentially in view. As Stop 1 is well-off the trail, see discussion for Stops 2 and 3.

Stop 2

Stop 2 is on the Bonnevier Trail adjacent to closed forest. The view was screened from this stopping point and no photography was obtained. All 4 landforms are potentially visible from this viewpoint with Landform 1 in the immediate foreground.

However, the Bonnevier trail location as provided by BCTS appears to traverse inside the location of beetle-exempt cutblock CO809 for 250m length and up to 30m within the cutblock boundary. The visual simulation from Stop 2 reveals the beetle-exempt cutblock CO809 as very large in the foreground, dominating Landform 1. Though well-shaped, CO8T5 is also large relative to the scale of Landform L2C, together with existing nonVEG directly adjacent in the same landform. Landform L3A is dominated by nonVEG. CO7ZL might be seen in the background (8360m) in L4C. A major portion of CO7ZL sits within VSU 863 (PR). The shape is good though it could be said to dominate the small sliver of Landform 4 as potentially seen from Stop 2 if no screening is introduced.

Stop 3 with Percent Alteration Calculation and RDI Determination

Stop 3 is at the dense forest edge opening onto existing nonVEG beetle-exempt cutblock CO808. It is also representative of Stops 1 and 2. The trail map provided by BCTS show a 175m length of Bonnevier Trail within CO808 – to be verified by BCTS. Views are towards Landforms 1 and 2 only with Landform 1 in the immediate foreground. The camera was placed within existing cutblock and along the edge of beetle-exempt CO809 is very small on right beyond excessively large CO808 on right side. CO8T5 is large on Landform 2C in association with very large existing nonVEG. The Stop 3 Percent Alteration and Determination Table (p. 10) indicates that L2C is already over the retention VQO of VSU 892 traversing the ridge top. The other VSU, VSU 890 is restricted to the back of the landform not seen from this Stop. CO8T5 alteration should take place until Visually Effective Green-up (VEG) is achieved in the existing opening harvested in 2013 to 2015. and then it would be very restricted in scale to meet R. In summary, of the 4 landforms visible from Stop 3, L2C already is in the upper end of Modification category of Altered Forest. Three landforms are beetle exempt with no new alteration planned and no further alteration until VEG achieved.

Stop 4

Stop 4 is 180m north of Bonnevier Trail and 900m east of the convergence of Bonnevier Trail with Heather Trail in open alpine. The stop provides interesting panoramic views of Landforms 1 and 2 and beyond. It is an easy 20m climb in elevation from Bonnevier and close to the ridgetop portion of Bonnevier where it overlooks Copper Valley. The viewpoint is representative of a high use area with easy viewing of Copper Valley.

Landform 1. Table 2 (p. 6,) and the VQO map (p. 22) reveal the complexity. The simulation on p.11 reveals L1A (beetle-exempt CO809, c, and D in view. L1D has a Modification VQO while the othe midground (2900-5200m). It occupies 35 degrees field of view within the simulation width of 125 degrees FOV. Existing beetle-exempt opening CO808-L16 is large and blocky, and beetle-exempt blocks CO808 and CO809 prominently in view. Other cutblocks also have good shape. CO8T5 is very mall in Landform 2C, closest to the viewpoint (1600m), and acceptable for meeting R, but will have to be severely constrained as seen from Stop 3 recommendations. The visible part of Landform 2 is 1760m away down the narrow side-valley of Copper Creek at the park boundary. Use Stop 6 for Percent Alteration calculation.

Stop 5

Stop 5 is on Fat Dog Cross Country Ski Trail in open alpine. Interesting panoramic views towards Landforms 1 and 2 and beyond. The view reveals more of beetle-exempt block CO809 and more recent and proposed harvesting in the middleground and background of Landform 1 than from Stop 4. The stop also reveals more nonVEG alteration in Landform 2 which comes within 1600m of the stop. Stop 6 is a better candidate for Percent Alteration determination due to the larger scale of alteration as seen from that Stop.

Stop 6 with Percent Alteration Calculation and RDI Determination

Stop 6 is at the First Brother Trailhead in open alpine. It is likely a high-use viewpoint. Landform 1 is 4500m to 10200m from this broad panoramic stop. Similar blocks are in view as from Stops 4 and 5, but with a slightly changed angle of view. L2A is approximately 4 km away, dominated by recent nonVEG harvesting. L3C comes into view containing CO727 in far midground (4600m). L4C is also seen, with CO7ZV, CO7ZN and CO7ZL. They are small, well-shaped and approximately 6000m away. Stop 6 is considered the best of Stop 4, 5, and 6 for Percent Alteration calculation. The results are presented in the Stop 6 Percent Alteration and RDI Determination Table on page 14. Of the 8 landforms visible from Stop 6, 5 meet the VQOs, and 3 are beetle-exempt.

Stop 11

Stop 11 is 600m away from the trail in open alpine. The broad panorama and the cirque lake feature directly below the cliffs likely make this an important drawing point for visitors hiking on Heather trail. Cutblocks in Landform 1 are 6600m to 9300m from Stop 11, and 30 degrees field of view in the 180 degree width of view panorama. Landform 2 is closest to the stop, coming within 1000m and the feature cirque lake seen directly below the stop. The dominating nonVEG cutblocks in Landform 2 are 2700m to 4000m distant. Landform 3 is mostly obscured by the foreground peak. Cutblocks in Landform 4 are between 4300m to 5300m away, well-shaped and very small.

Stop 7

Stop 7 is 400m north of Heather Trail in partly open alpine, and perhaps an unlikely visitation point for its hiking distance compared with Stop 11 (615m off trail) and 8 (880m off trail), both of which offer broad panoramas and cirque lakes directly in view. CO8U3-21 in Landform 1C is the solitary new cutblock visible from Stop 7, and fits the small portion of the landform that is visible from this viewpoint, and is expected to meet Partial Retention. Existing cutblocks from 2013-2015 are evident and dominate Landform 2, though the landform is relatively small and partially obscured in the overall view.

Stop 8 with Percent Alteration Calculation and RDI Determination

Stop 8 is 880m from Heather Trail in open alpine, offering a classic cirque lake (tarn) feature directly below, and panorama beyond. The view captures Landform L4C centrally in close midground and a sliver only of Landform L3B. Landform 4C has 14% alteration, exceeding the PR limit by 7%. CO7ZM is seen on the right and CO7ZV seen on the left, together with a small nonVEG opening. These 2 proposed cutblocks are well-shaped, but CO7ZV alone has 10% alteration. Both cutblocks would benefit from WTRAs to reduce their scale. In this focal view. A tiny portion of CO7ZL is visible in the landform. As L4A and L4C are seen visually as one landform from this Stop, the 2 landforms have been combined to determine percent alteration at 7.43%, closely meeting the PR VQO. Addition of WTRAs could easily bring the net alteration within the VQO limits.

Percent Alteration in Landform L3B is 46% in perspective view while the VQO attributed to VSU875 in L3B is Modification. L3B should be discounted given most of the landform is screened from view. See Stop 9 for proper L3B percent alteration and determination (p. 20). Substantial existing openings are seen in the distance outside of the Copper Creek planning area.

Stop 9 with Percent Alteration Calculation and RDI Determination

Stop 9 is 340m from Heather Trail in open alpine. It provides a narrow view into upper Copper headwaters and panoramas beyond. It looks towards Landform 4 in the near view, and Landforms 3 and 1 in further view. BCTS has deferred CO7XV and A70574-2 for adjacency, bringing the landform closer to meeting the PR VQO limit of 7%. L4C contains proposed cutblock CO7ZV, and L4D contains CO80C and CO87P. As L4C and L4D visually merge as a single landform as seen from Stop 9, together they would have 8.7% alteration, 2.7% over the PR limit. RDI recommends the addition of WTRAs in these two cutblocks to enable the L4 landform group to meet the PR VQO.

L4A contains existing cutblock CO7XU. RDI separated off the VSU 870-R component, leaving CO7XU in L4A2. This sub-unit meets the PR VQO of the 3 VSUs in the unit. The Percent Alteration and RDI Determination Chart on page 20 reveals the amount contributed by each cutblock. In summary, 3 landforms meet the VQO, 4 landforms exceed the VQO. When 2 of those L4C and L4D are merged together as L4, the percent alteration nearly meets the PR VQO, and can meet the VQO with some WTRAs.

L3C would doubly exceed the Modification VQO set by VSU 875-M. RDI recommends deferral of CO7XS to enable the VQO to be met while allowing CO7XR to proceed (or defer a comparable combination of both cutblocks as deemed most operationally effective).

Stop 10

Stop 10 is 640m from Nicomen Lake Trail, in partially-open alpine after walking from the landing spot to find it. It provides a narrow view into the upper Copper headwaters. It was selected primarily to obtain a view of east-facing cutblocks along Copper Creek in Landform 4. Landform 4 is in midground view (1400-4500m) occupying 35 degrees of the 100 degree field of view in the visual simulation. CO87P, CO80C, and CO7ZV are all clearly visible within Landform 4. CO87P is the additionally visible cutblock compared to Stop 9. L4C and D merge visually together as a single landform.

L3B is midground 6000m to 6500m viewing distance with CO7XS prominent, while Landforms L1A, L1C, and L1D are in the background. This stop is unlikely to attract visitors given the heavy forest cover and absence of

1. Conclusions and Recommendations

The helicopter flight was highly efficient and effective in obtaining on-the-ground determination of key viewpoints and related photography along the boundary of E.C Manning Provincial Park looking down into the Copper Creek Valley. The 11 Stops recorded viewing conditions ringing the south side of the valley to observe the 14 landforms established by RDI and all 23 cutblocks in the BCTS plan, as well as existing recent alteration (nonVEG). Percent Alteration was calculated from 4 stops – 3, 6, 8, and 9. These were representative of the range of viewing opportunities.

The viewing opportunities from Manning Park trails in conjunction with the cutblock plan are complex. This visual assessment exercise provides spatial 3-D understanding and guidance that should prove to be valuable in the immediate term and further into the future.

The Visual Landscape Inventory and Visual Quality Objectives were likely established from along Copper Creek access roads. The Visual Sensitivity Units include a range of VQOs from Retention to Modification. Most of the proposed plan is within Partial Retention VQOs. Adjacent VQOs were expanded to include NVS areas visible from the viewpoints.

Key RDI Determinations:

1. Stop 3 is at the forest edge or within the existing cutblock CO808 logged in 2016. The actual position of Bonnevier Trail should be verified by BCTS to determine if the trail is further back in the trees or if the trail is truly in the open.
2. Landform 2C as seen from Stop 3 will be excessively altered by CO8T5 (25%) and the nonVEG (18%). The numbers indicate that harvesting of CO8T5 is premature until green-up is achieved in the adjacent nonVEG areas in L2C, and even then, CO8T5 would have to be reduced in scale by nearly two-thirds to meet the VQO of Retention, which the the VQO of VSSU 892 traversing the ridgetop.
3. Stop 8 offers key viewing of the cirque lake directly below and the panorama beyond. When L4A, L4B, and L4C are grouped together, the landform would exceed the limit of Partial Retention by just 0.43%. A few WTRAs would easily bring the alterations into PR.
4. Stop 9 is 340m off the Heather Trail and may receive limited visitation. However, this collection of new and existing cutblocks will dominate Landform 4C and 4D. However, when grouped together as they are seen visually together, Percent Alteration nearly meets the PR VQO (8.7%), and should be achievable with addition of some WTRAs.
5. L3C would doubly exceed the Modification VQO set by VSU 875-M. RDI recommends deferral of CO7XS, or a comparable reduction of CO7XS and CO7XR together as best feasible operationally to enable the VQO to be met.



Dr. Kenneth B. Fairhurst, PhD, RPF
RDI Resource Design Inc
December 10, 2018

Table 1

Cutblock Visibility by Landform and Stop Number													
Landform	Cutblock	Field Photo Stop Number											
		1	2	3	4	5	6	11	7	8	9	10	
L1A	CO809-19	v-l	v-l	v-s	v-vl*	v-l	v-l	v					v
	CO808-L16	v		v-l	v-vl*	v	v-l						
	nonVEG	v			v	v	v						
L1B	CO80B-18						v-s					v-s	
	CO8U0-21						v	v					
	CO8TZ					v	v	v					
L1C	CO8U3-21					v	v	v	v				
	CO_2018_1										v-s	v	
L1D	CO_2018_2					v			v		v-s		
	CO_2018_3					v					v-3	v	
	CO_2018_4								v		v-s		
	CO_2018_5												
	CO5ZZ					v	v						v
L2A	nonVEG	v-l		v			v	v					
	CO89Q-20	v-s											
L2B	CO84N -L17	nvs				v	v						
	nonVEG	v	v	v		v	v						
L2C	CO8T5-19	v	v-l	v-l	v								
	nonVEG	v		v									
L3A	nonVEG only	v	v										
L3B	CO7XR-25									v-s	v		
	CO7XS-25									v-s	v	v	
	nonVEG										v	v	
L3C	CO7Z7-25	v					v						
	nonVEG	v					v						
L4A	CO7XU-L17								v	v			
L4B	CO7XT									v-s			
L4C	CO7ZL-21	v	v				v	v		v-s			
	CO7ZM-19						v	v		v			
	CO7ZV-20						v			vl	v	v	
L4D	CO87Q												
	CO80C-19										v	v	
	CO87P-20										v-s	v	
Code		v-l	visible-large										
		v-vl	visible - very large										
		v	visible										
		v-s	visible - small										

Deletions due to adjacency by BCTS: CO80A, CO80E, CO80D, and west half of CO80B in L1, and CO7XV and A705-74-2 in L4.

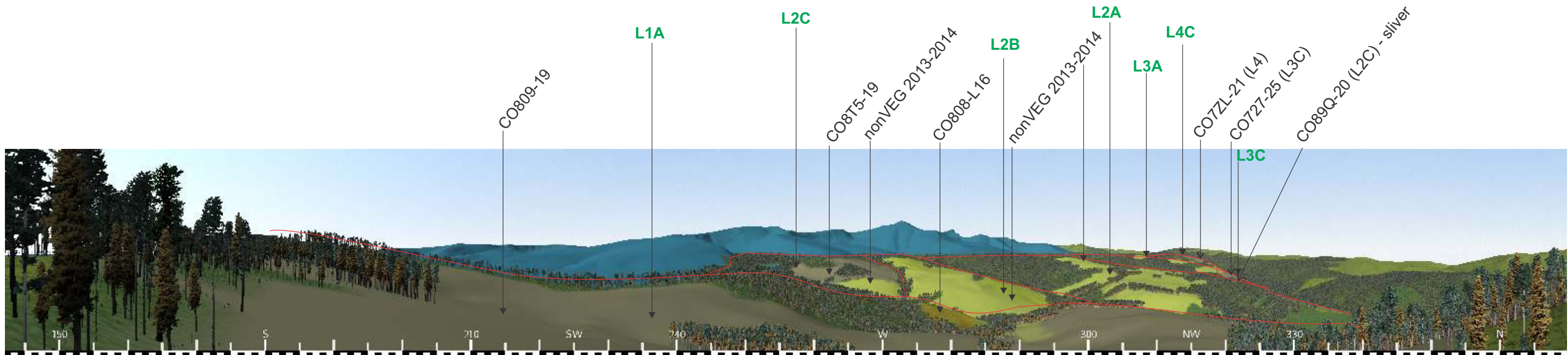
Table 2

Landform	Visual Sensitivity Unit																	
	868 M	869 M	874 PR	871 PR	887 PR	892 R	890 PR	889 R	882 PR	880 R	876 PR	867 PR	875 M	873 PR	863 PR	870 R	866 R	864 PR
L1A																		
L1B																		
L1C																		
L1D																		
L2A																		
L2B																		
L2C																		
L3A																		
L3B																		
L3C																		
L4A																		
L4B																		
L4C																		
L4D																		

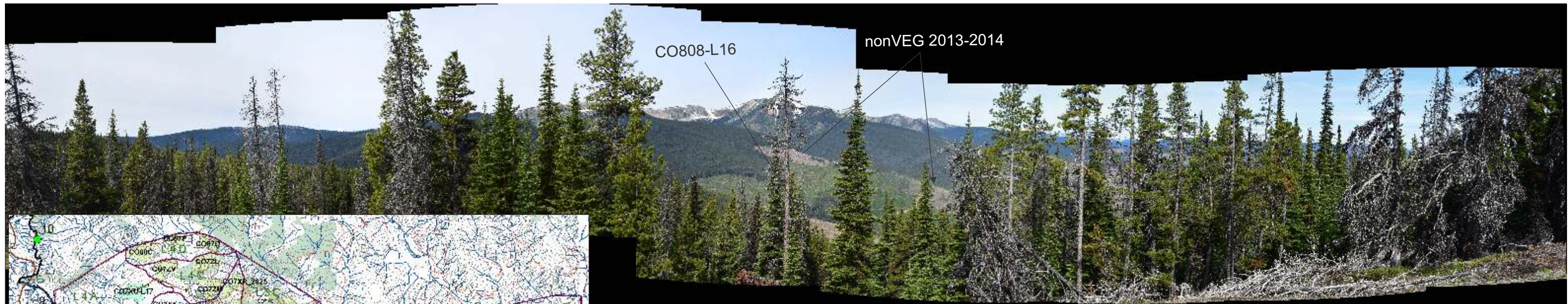
Landforms 4A, 4B, and 4C group visually together as a single landform with Partial Retention VQO when viewed from Stop 8 and Stop 9. See Viewpoint analysis sheets and Percent Alteration Tables for Landform 4. Retention VSUs excluded in those calculations.

Landforms 4C and 4D group visually together as a single landform with Partial Retention VQO when viewed from Stop 10. L4D is considered NVS in the inventory. Stop 10 is not a likely viewpoint as discussed on the Stop 10 page (p. 21).

Visual Sensitivity Unit - VQOs and Visibility Summary Tables by Landform

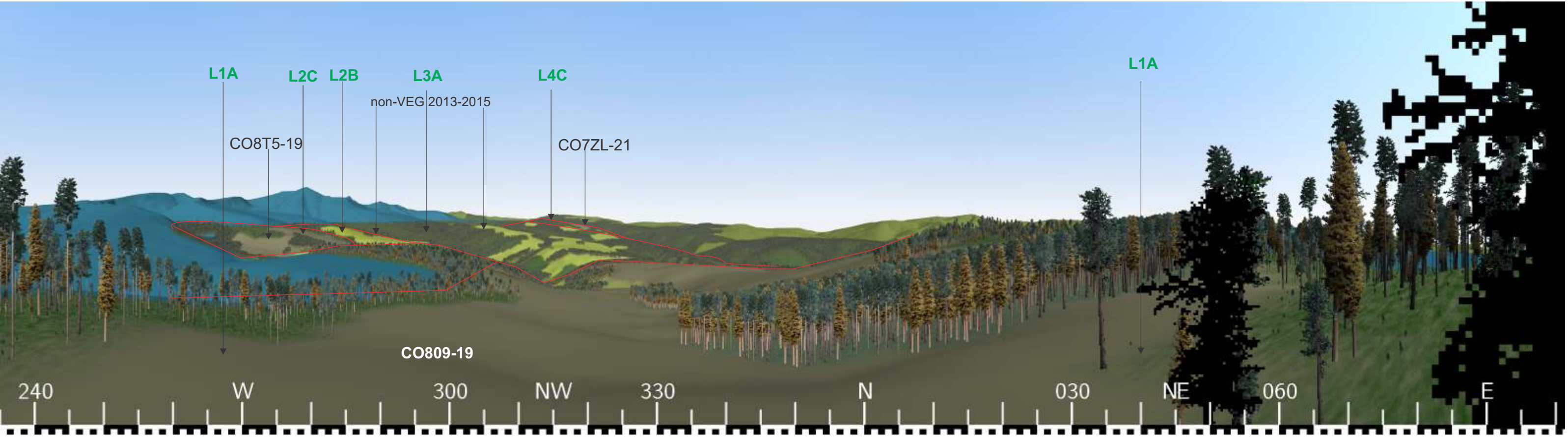


Landform 1A contains cut-blocks CO809 and CO808. Both are bark beetle blocks without VQO constraints per the 2012-2018 FSP and are now logged.
 Landform 2C has CO8T5 and nonVEG. PR VQO exceeded in L2C - see Stop 3 Percent Alteration.
 Stop 1 is 750m north of Bonnevier Trail and is unlikely to be visited unless through the cut-block from Stop 2.



Pan 863-3-0271-0279
 partially screened at camera point

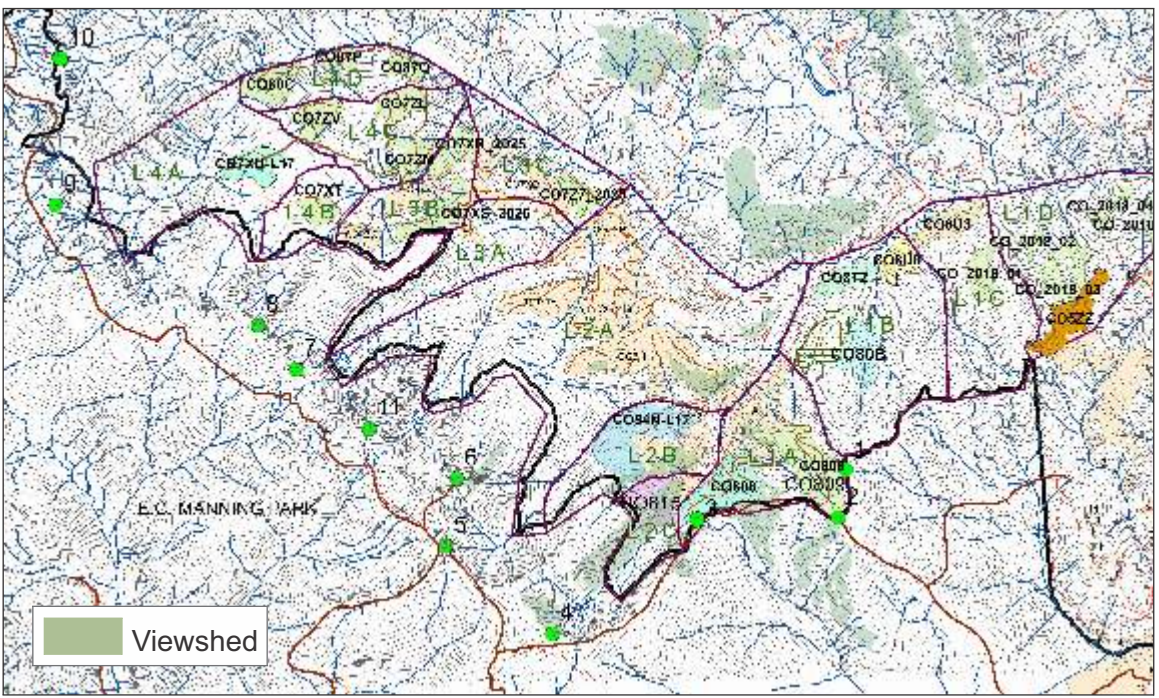




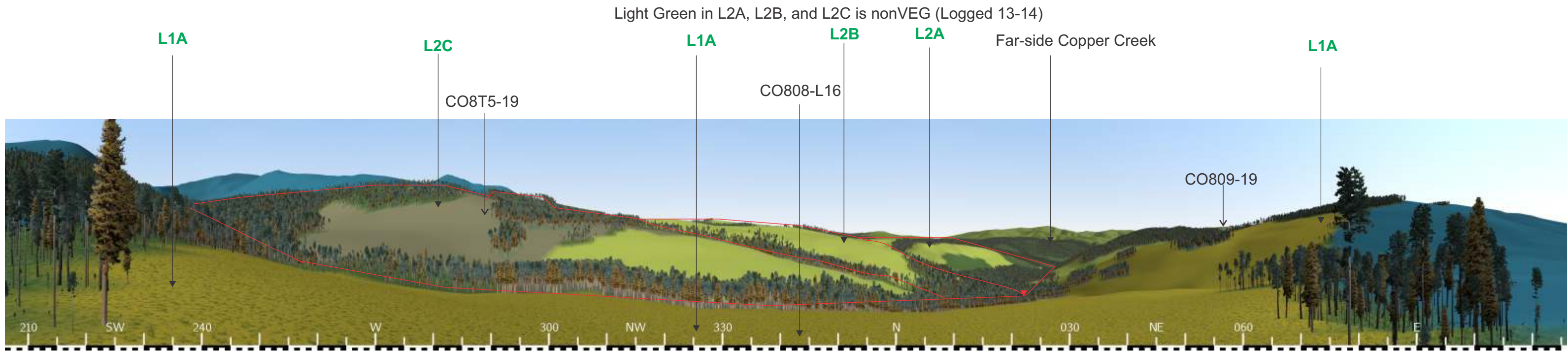
10865 pixels

Landform 1A contains cut-blocks CO809 and CO808.
 Both are bark beetle blocks without VQO constraints per the 2012-2018 FSP and are now logged.
 Landform 2C contains CO8T5. VQO exceeded - see Stop 3 for Percent Alteration.

Stop 2 was not a stopping point for photography - treed.



Stop 2 Viewpoint 863.1/4.1 - 2018 Pano with Viewshed



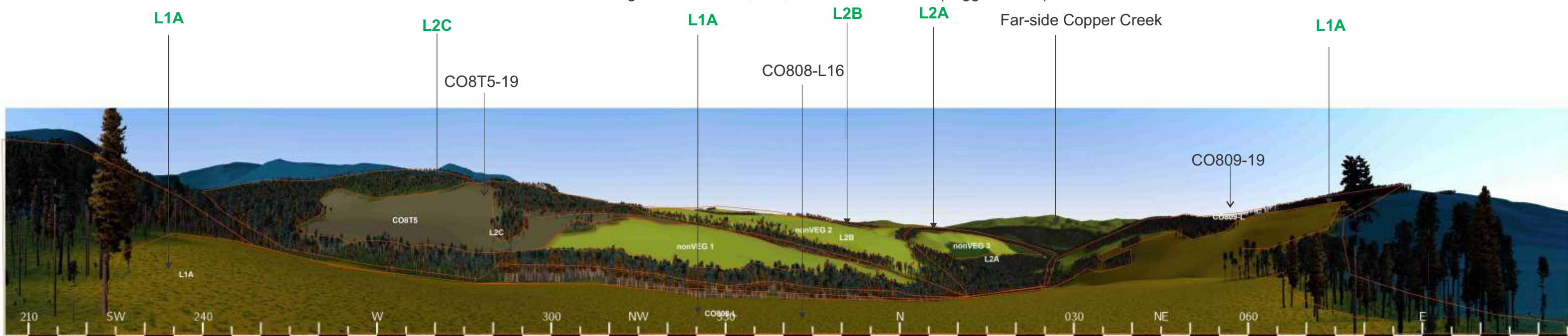
Landform 1A contains cut-blocks CO809 and CO808. Both are bark beetle blocks without VQO constraints per the 2012-2018 FSP and are now logged. Landform 2C contains CO8T5 and adjacent nonVEG in most of the landform. VQO exceeded. See next page for Percent Alteration.

12960 pixels

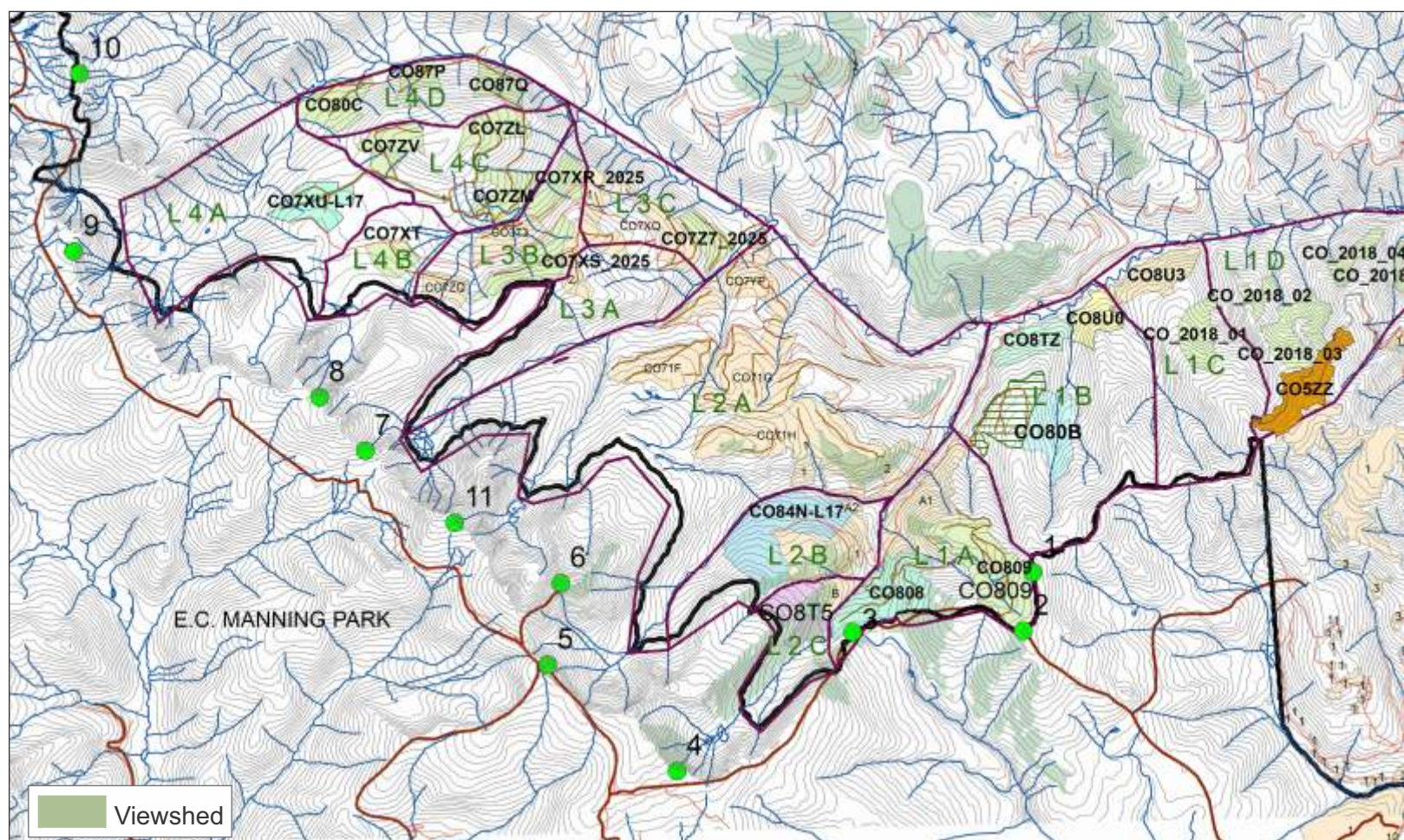


Stop # 3 Viewpoint 878-879/6.1 - 2018 Pano Photos 281-299; 300-309

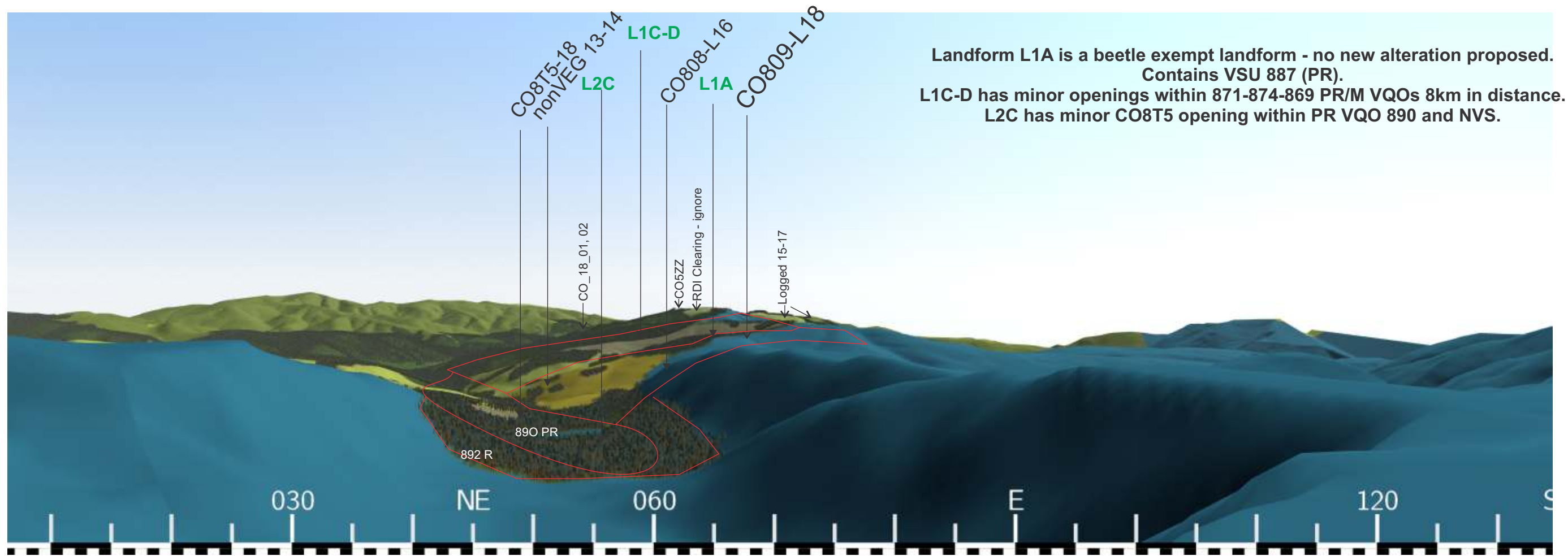
Light Green in L2A, L2B, and L2C is nonVEG (Logged 13-14)



Landform 1A contains cut-blocks CO809 and CO808. Both are bark beetle blocks without VQO constraints per the 2012-2018 FSP and are now logged.
 No further analysis required in L1A.
 Landform 2C contains CO8T5 and adjacent nonVEG in most of the landform. VQO exceeded by nonVEG 1 alone (18%).
 CO8T5 (25.5% additional) cannot proceed until visually effective green-up (VEG) achieved in Landform 2C.
 Landforms 2A and 2B were beetle exempt.

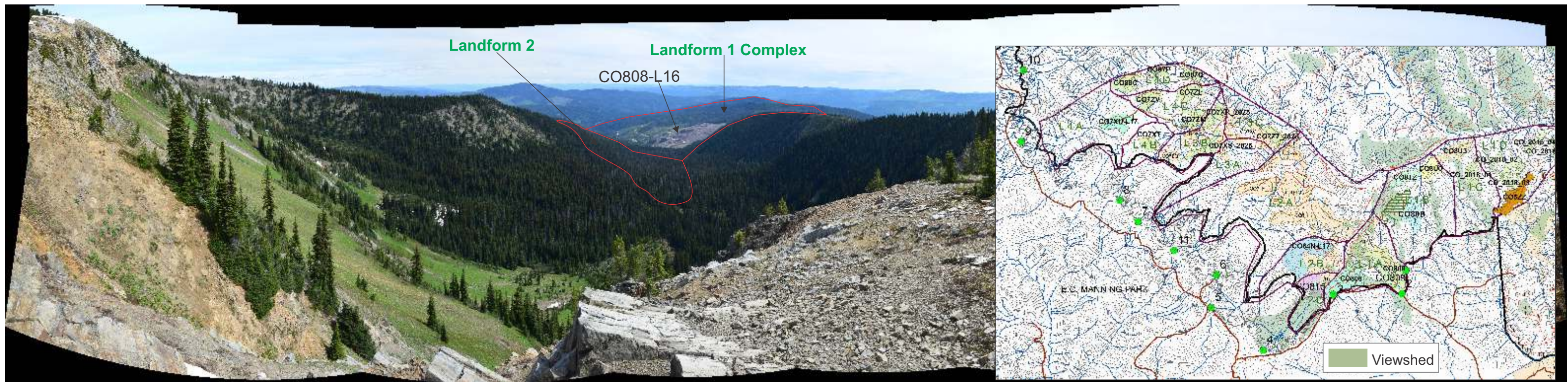


Percent Alteration Stop 3			
NAME	AREA2	% Alt.	Determination
L1A	1207229.82		L1A is beetle exempt. VSU 887 PR. No further alteration until VEG achieved.
CO808-L	746573.39	61.84%	
CO809-L	348.64	0.03%	
	746922.03	61.87%	
L2C	452681.30		Split VSUs 892 - PR, 890 - PR. Present nonVEG exceeds either VQO. No CO8T5 alteration until VEG is achieved.
CO8T5	115608.85	25.54%	
nonVEG 1	80385.43	17.76%	
Sum Alt L2C	195994.28	43.30%	
L2B	81051.78		L2B Beetle Exempt, no new. Split VSUs 890 - PR, 889 - R. No further alteration until VEG achieved.
nonVEG 2	40258.21	49.67%	
L2A	64281.31		L2A Beetle Exempt, no new. Split VSUs 876, 882 - PR; 880, 889 - R. No further alteration until VEG achieved.
nonVEG 3	17813.24	27.71%	
Summary: Of the 4 landforms visible from Stop 3, L2C already exceeds the dual VQOs of the 2 VSUs within (R-PR). No CO8T5 alteration until VEG achieved. 3 landforms are beetle exempt with no new alteration planned and no further alteration until VEG achieved.			



Landform L1A is a beetle exempt landform - no new alteration proposed.
 Contains VSU 887 (PR).
 L1C-D has minor openings within 871-874-869 PR/M VQOs 8km in distance.
 L2C has minor CO8T5 opening within PR VQO 890 and NVS.

5600 pixels of 15360=131 Deg FOV



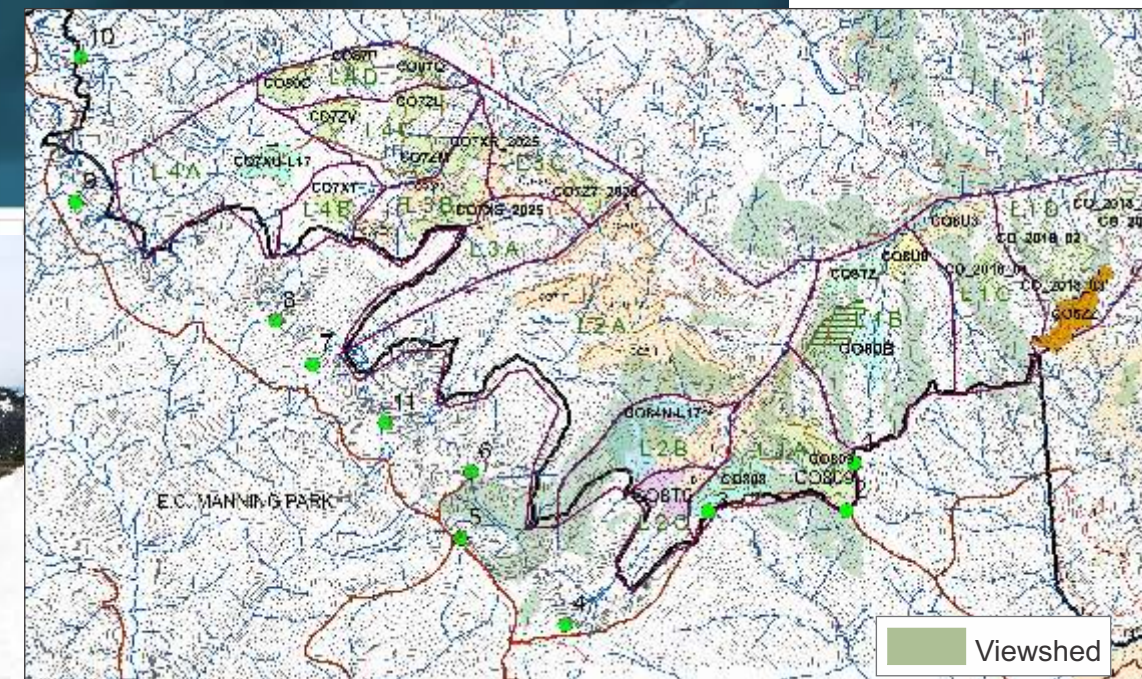
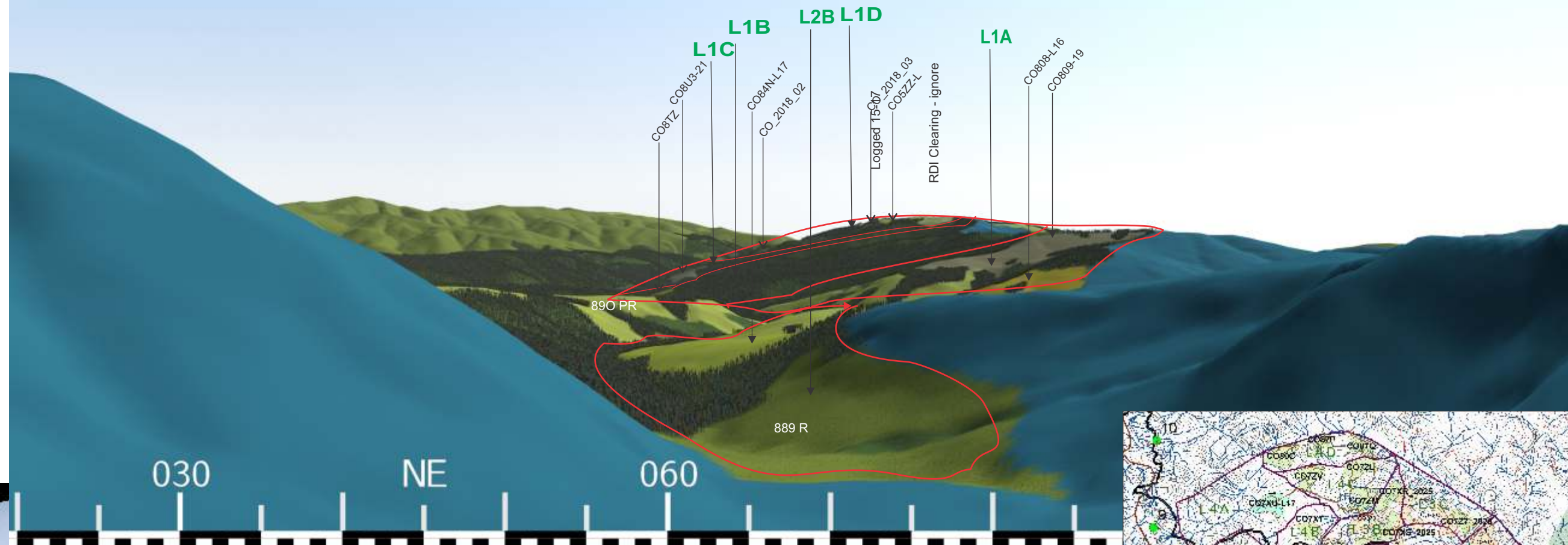
Stop # 4 Viewpoint and Viewshed

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 December 10, 2018

Landform L1A is a beetle exempt landform - no new alteration proposed.

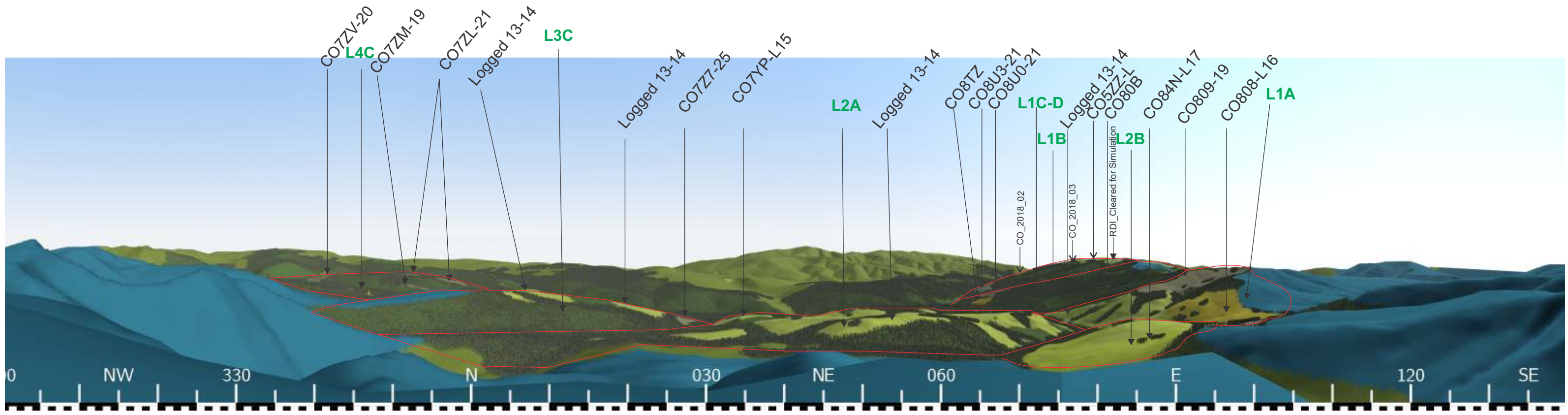
Contains VSU 887 (PR).

L1C and D have minor openings 9 to 10 km in distance within 871-874-869 PR/M VQOs
L2B has existing exempt beetle block CO84N 3 km away from viewpoint within R VQO 889.

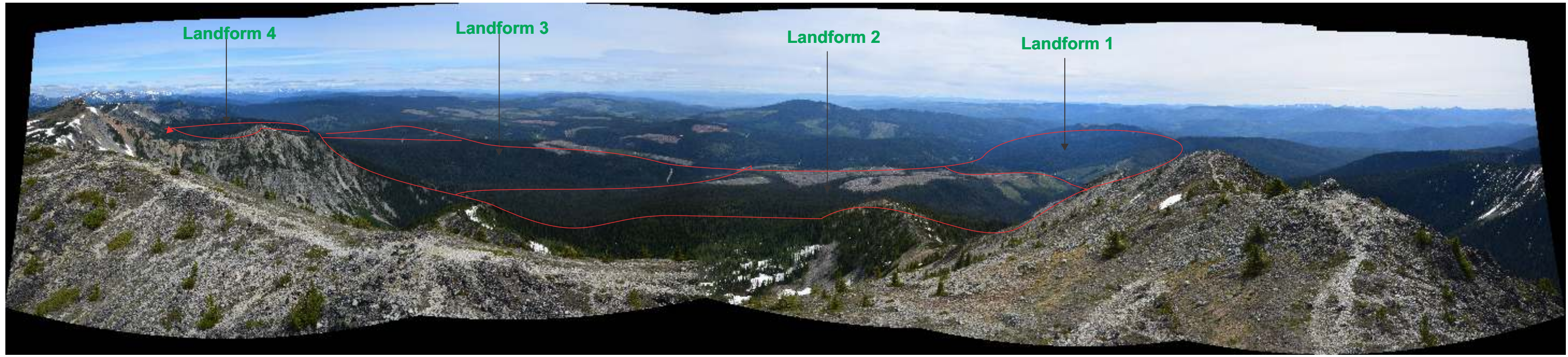


Deletions due to adjacency by BCTS: CO80A, CO80E, CO80D, and west half of CO80B in L1, and CO7XV and A705-74-2 in L4.

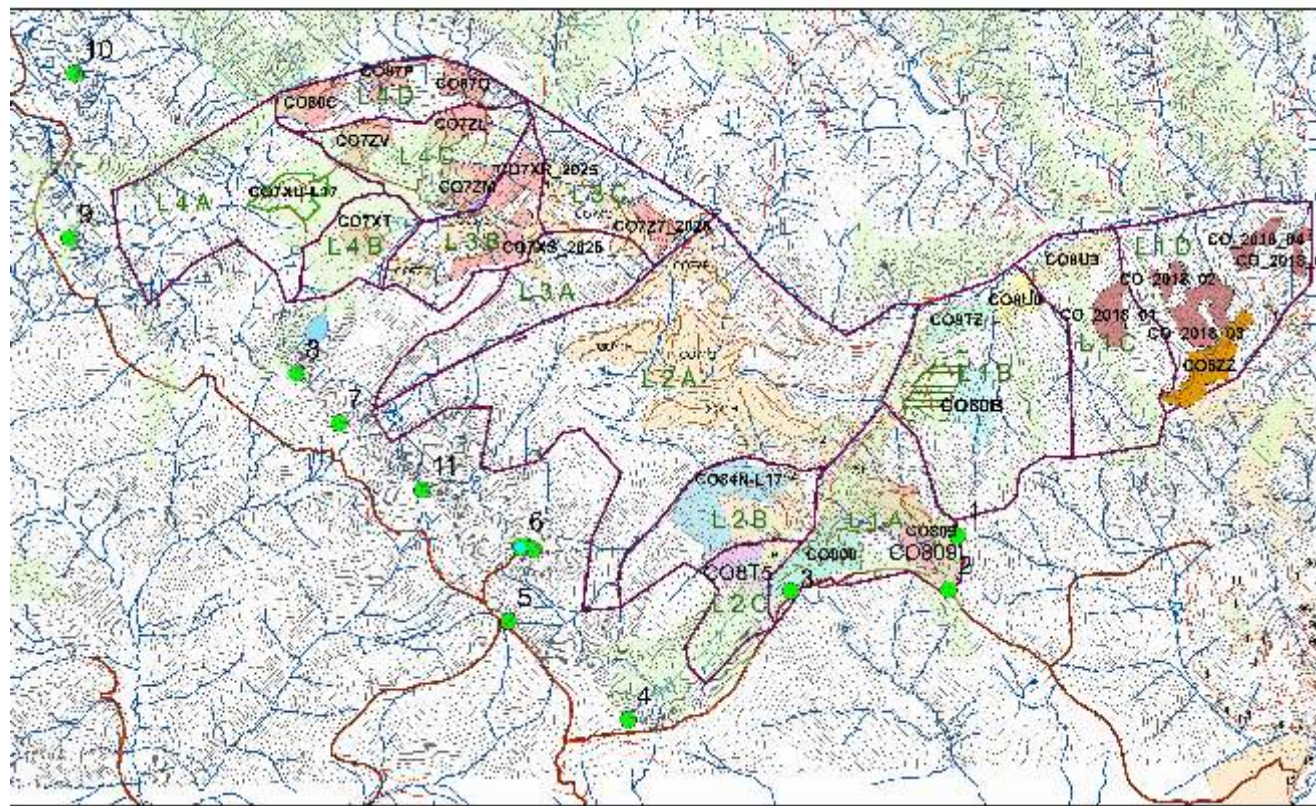
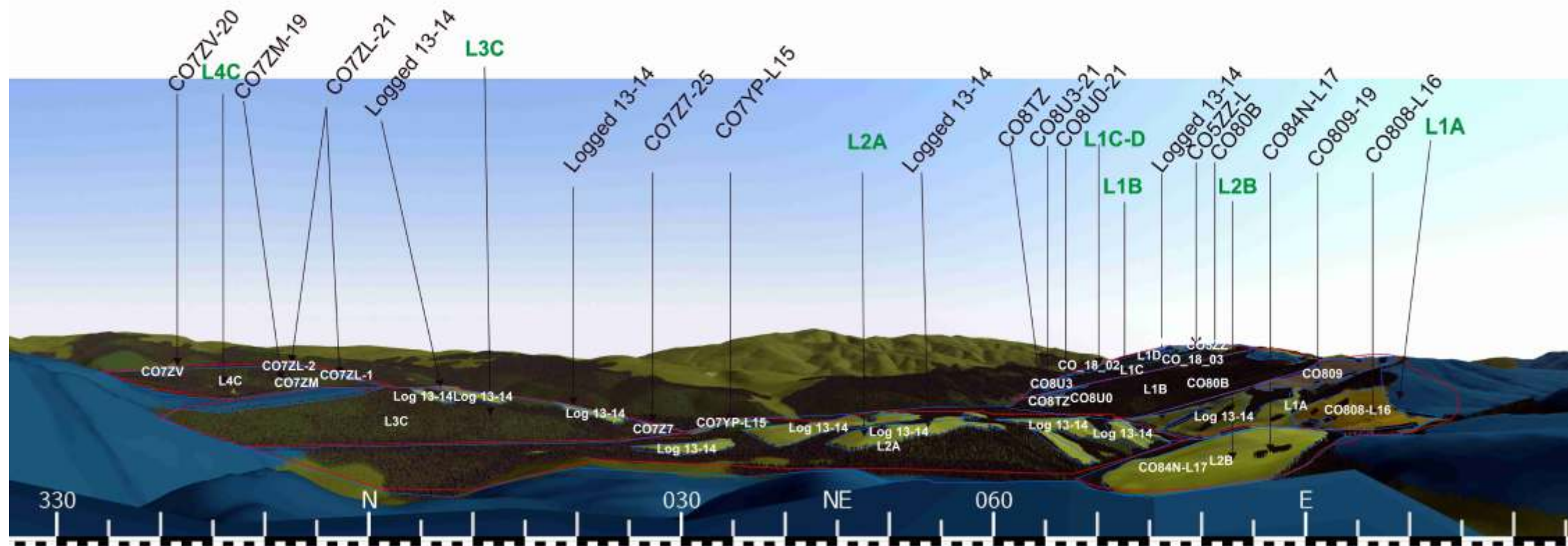
Stop #5 - 885 VP14 Photos 343-375 with Viewshed



8500 pixels of 15360=200 Deg FOV



Deletions due to adjacency by BCTS: CO80A, CO80E, CO80D, and west half of CO80B in L1, and CO7XV and A705-74-2 in L4.

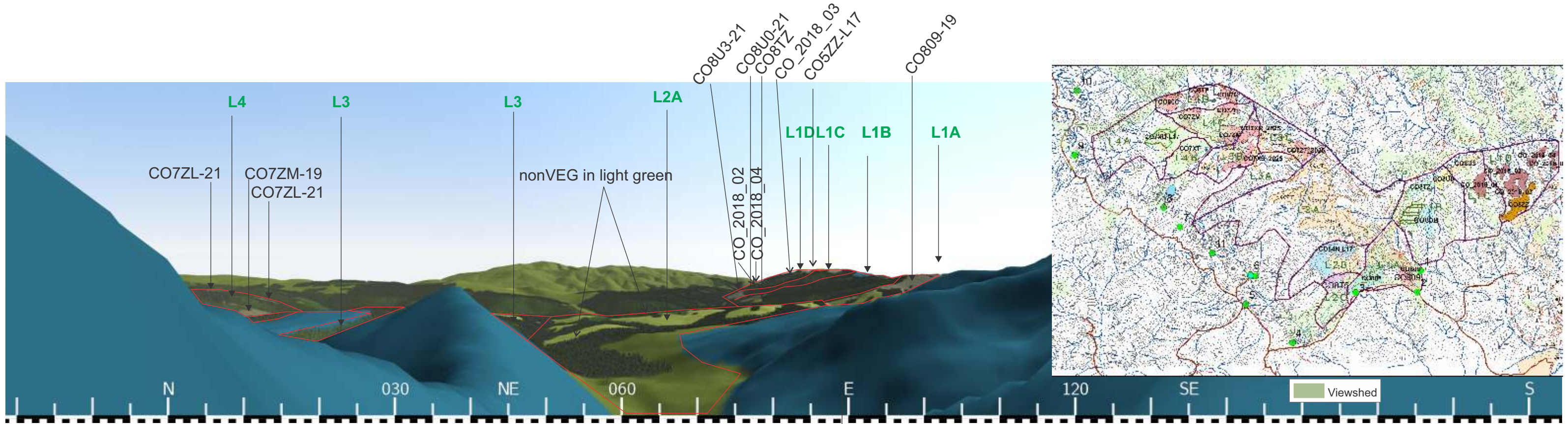


Viewshed

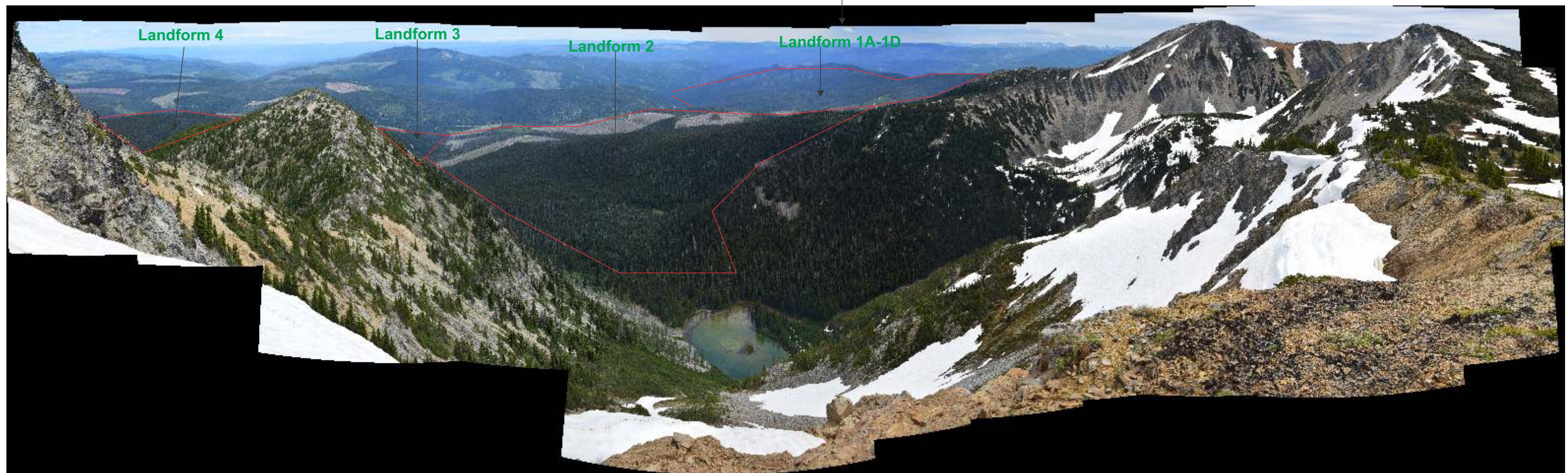
Deletions due to adjacency by BCTS: CO80A, CO80E, CO80D, and west half of CO80B in L1, and CO7XV and A705-74-2 in L4.

Percent Alteration Stop 6			
NAME	AREA2	% Alt.	Determination
L1A	75953.17		L1A Beetle Exempt. No new. VSU 889-PR.
CO808-L16	19518.37	25.70%	
CO809	10112.35	13.31%	
Log 13-14	22603.82	29.76%	
Sum Alt. L1A	52234.53	68.77%	
L1B	53025.76		L1B meets PR. VSU 871 - PR.
CO8TZ	872.52	1.65%	
CO8U0	507.84	0.96%	
CO80B	79.39	0.15%	
Sum Alt. L1B	1459.75	2.75%	
L1C	12278.11		L1C meets PR 8.6 km Distant View. VSUs 871, 874 - PR.
CO8U3	819.47	6.67%	
CO8TZ	819.47	6.67%	
Sum Alt. L1C	819.47	6.67%	
L1D	6038.60		
CO_18_02	73.87	1.22%	
CO_18_03	229.09	3.79%	
CO5ZZ	65.12	1.08%	
CO5ZZ	270.59	4.48%	
CO5ZZ	305.28	5.06%	
Sum Alt. L1D	943.94	15.63%	
L2A	245519.93		L2A Beetle Exempt, no new. VSUs 876, 882 - PR; 880, 889 - R.
CO7YP-L15	1585.58	0.65%	
Log 13-14	3295.41	1.34%	
Log 13-14	8622.68	3.51%	
Log 13-14	10826.61	4.41%	
Log 13-14	11025.77	4.49%	
Log 13-14	5113.51	2.08%	
Sum Alt. L2A nonVEG	40469.56	16.48%	
L2B	60148.10		L2B Beetle Exempt, no new. VSUs 890 - PR, 889-R.
CO84N-L17	48700.07	80.97%	
Sum Alt. L2B	48700.07	80.97%	
L3C	115414.00		L3C meets PR VSU 867.
CO7Z7	947.85	0.82%	
Log 13-14	2021.97	1.75%	
Log 13-14	937.96	0.81%	
Log 13-14	1768.66	1.53%	
Sum Alt. L3C	5676.44	4.92%	
L4C	33484.20		L4C meets PR VSU 863.
CO7ZL-1	649.65	1.94%	
CO7ZM	336.28	1.00%	
CO7ZL-2	280.70	0.84%	
CO7ZV	830.86	2.48%	
Sum Alt. L4C	2097.49	6.26%	

Summary: Of the 8 landforms visible from Stop 6, 5 meet the VQO of the VSUs within them and 3 landforms are beetle exempt with no new alteration planned.



5100 pixels of 15360=120 Deg FOV

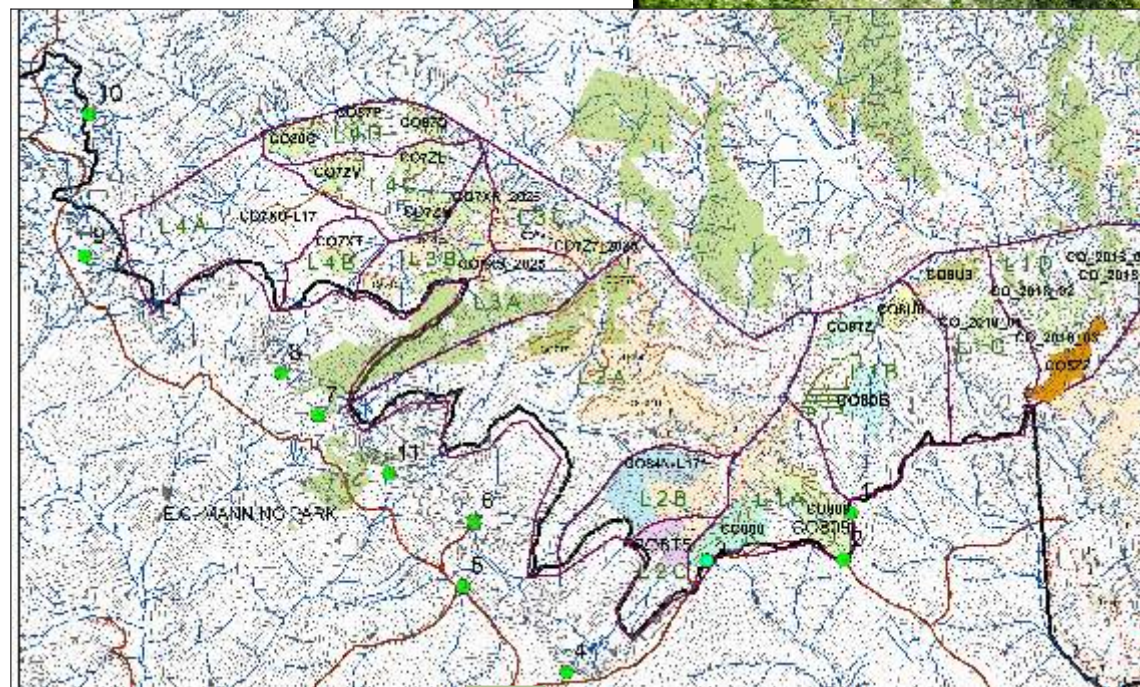
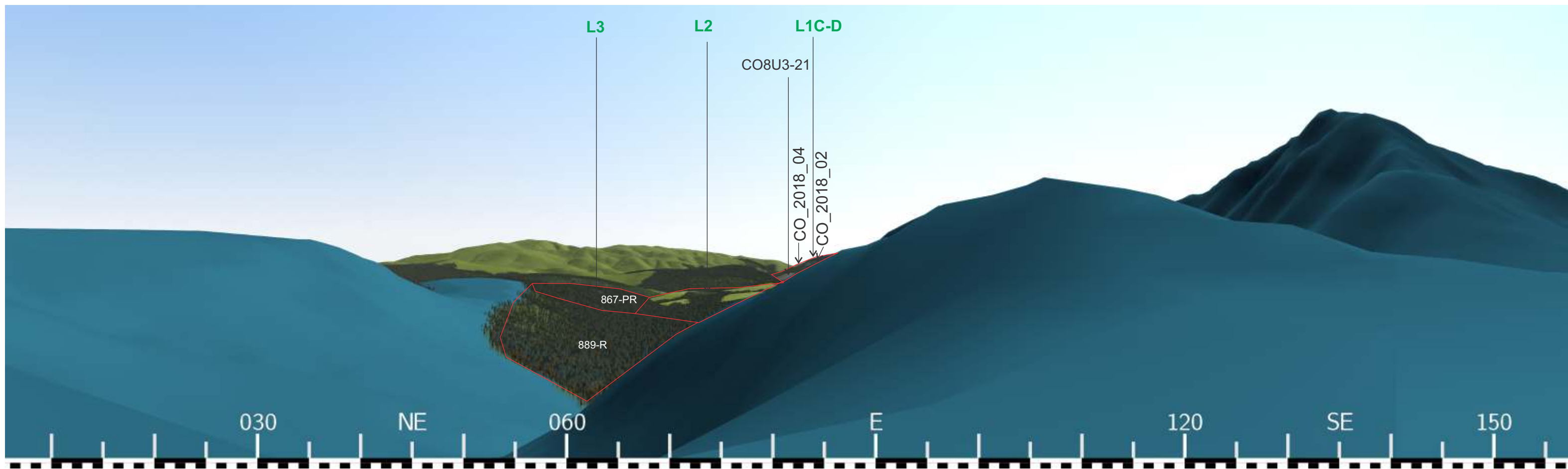


Deletions due to adjacency by BCTS: CO80A, CO80E, CO80D, and west half of CO80B in L1, and CO7XV and A705-74-2 in L4.

Cutblocks in L1 are 6.6 km to 9.3 km from Stop 11. NonVEG in L2A is beetle exempt - no new.

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Stop 11 - Viewpoint 898/899 15 - 2018 (new 2018 VP) with Viewshed



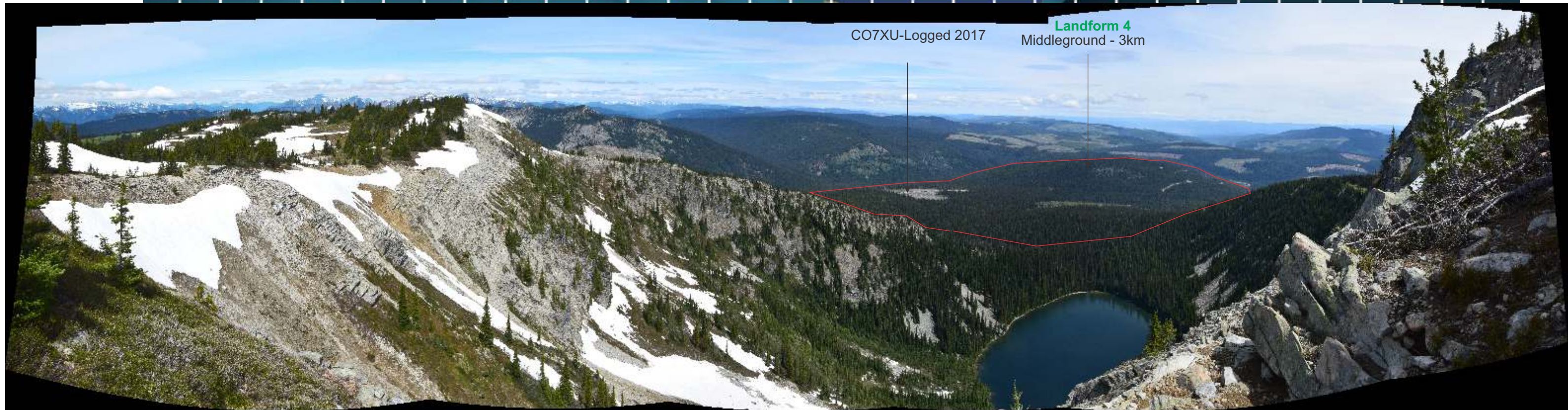
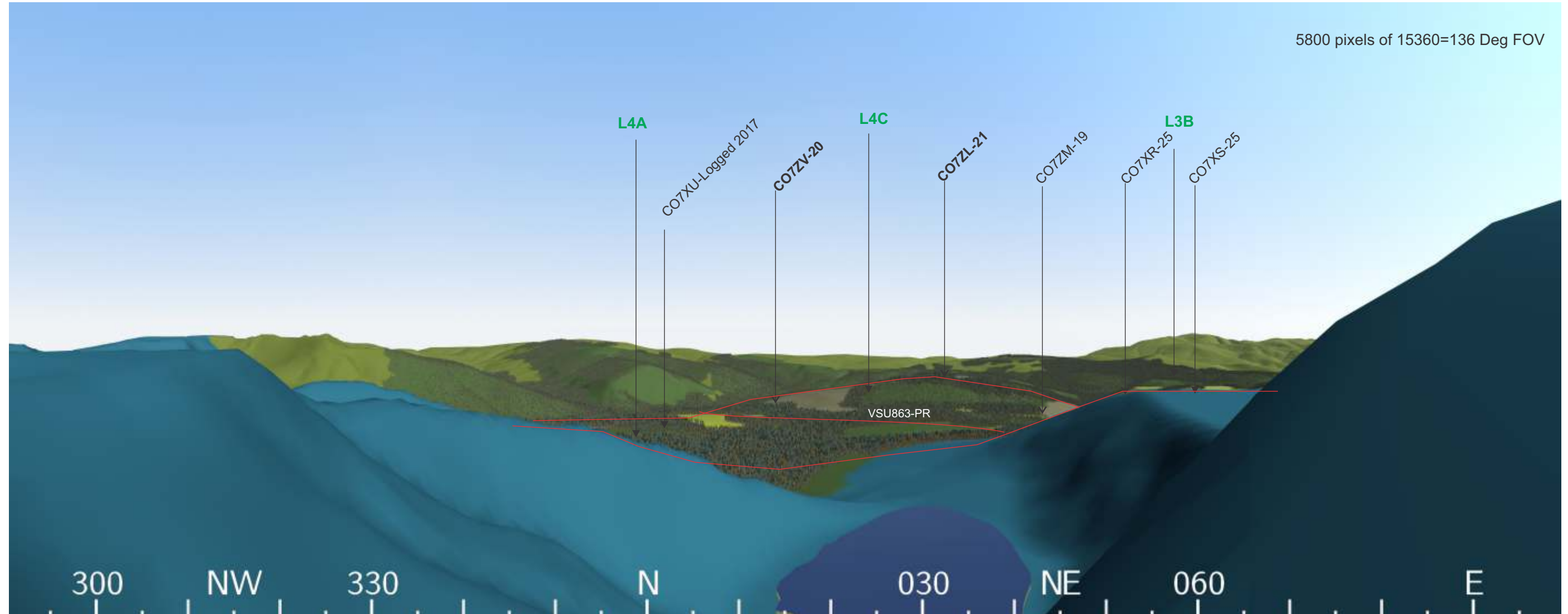
Stop 7 is 400m north of Heather Trail

CO8U3-21 in L1C is the solitary new cutblock visible from Stop 7. It fits the small portion of the landform that is visible from this viewpoint, meeting Partial Retention. Existing cutblocks from 2013-2015 are highly evident and dominate the L2 landform 876-PR - beetle exempt).

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December 10, 2018

Stop 7 - Viewpoint 890 - 2018 VP19 - Photos 382-396 with Viewshed

Viewshed

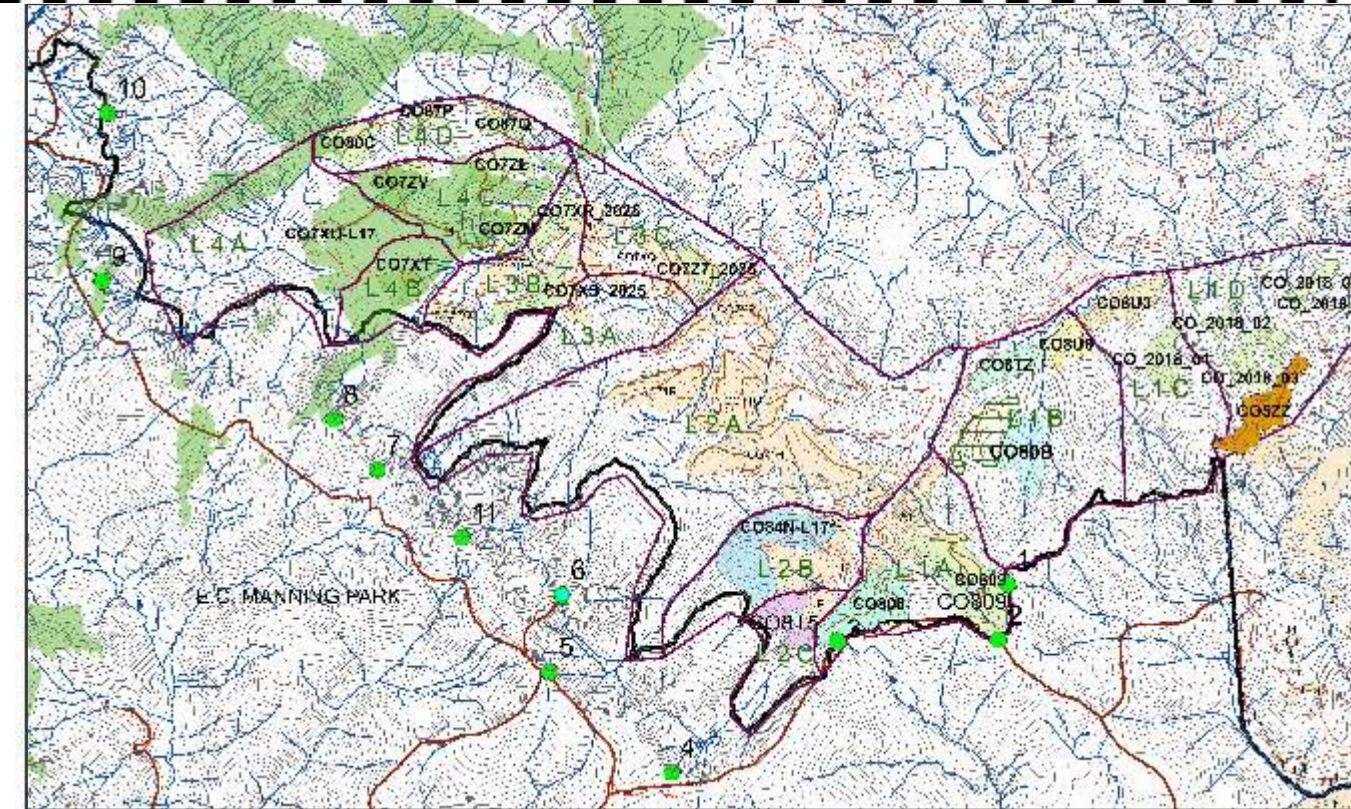
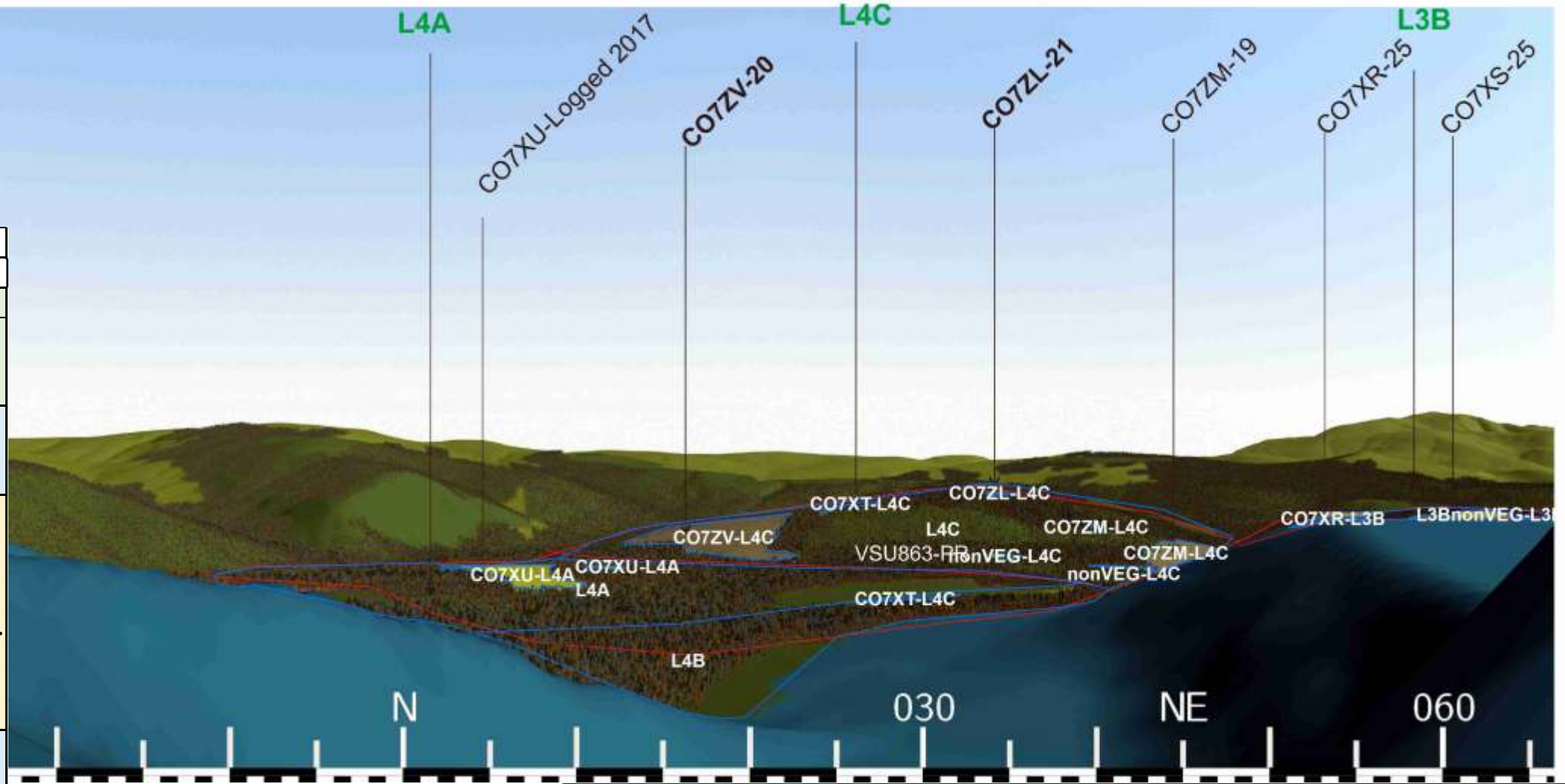


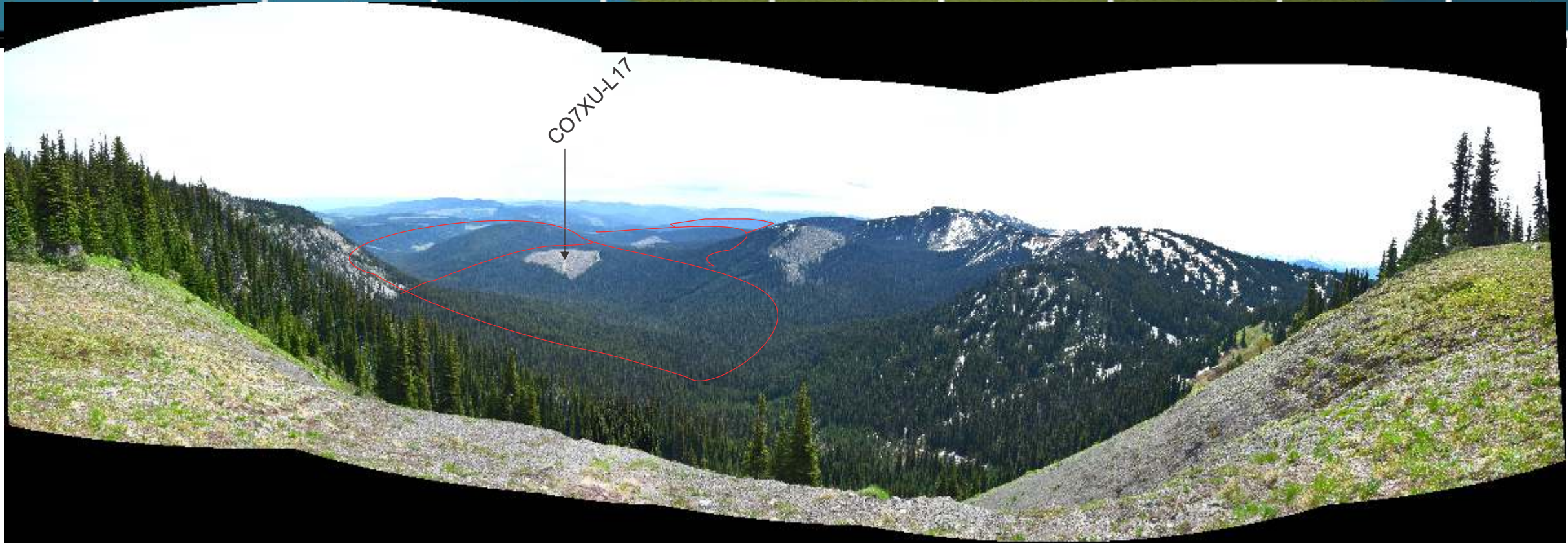
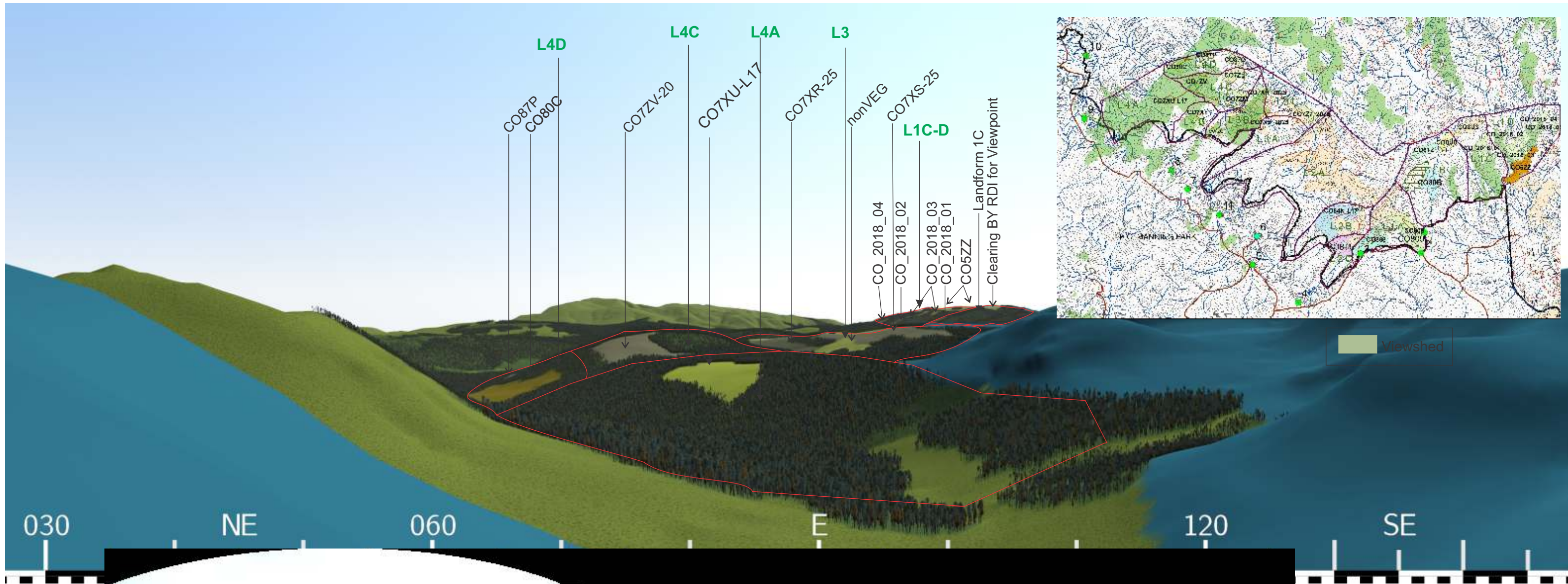
Stop #8 - Viewpoint 891-24- 2018 with 2018 Photo 397-408

Percent Alteration and Determination of VQO Achievement			
NAME	AREA2	% Alt.	Determination
L4A	159599.15		
CO7XU-L4A	7483.69	4.69%	L4A Exempt, no new. VSUs 896-870 - R, 864 - PR.
CO7XU-L4A	313.53	0.20%	
Sum Alt. L4A	7797.23	4.89%	
L4B	123574.96		
CO7XT-L4B	1304.49	1.06%	L4B. VSUs 873-863 - PR met.
Sum Alt. L4B	1304.49	1.06%	
L4C	176949.04		
CO7ZV-L4C	18190.94	10.28%	L4C VSU 863 - PR. VQO exceeded. CO7ZV is 3% over PR limit on its own.
CO7ZM-L4C	5509.49	3.11%	
CO7ZM-L4C	181.79	0.10%	
CO7ZL-L4C	369.42	0.21%	
nonVEG-L4C	498.98	0.28%	
nonVEG-L4C	344.01	0.19%	
Sum Alt. L4C	25094.63	14.18%	
L4 All Scenario	460123.16		All L4 would be close to meeting PR VQO if sub-units considered together. VSUs 896 and 870 (both R) are NVS from this viewpoint. Only PR VSUs 863 and 873 visible. Minor leave patches in CO7ZV would bring entire L2 into PR.
Total Alteration	34196.35	7.43%	
L3B - Sliver	9838.49		
CO7XR-L3B	990.22	10.06%	L3B - sliver only - VSU 875-M - ignore from this stop (see Stop 9).
CO7XS_L3B	553.74	5.63%	
nonVEG-L3B	2054.14	20.88%	
nonVEG-L3B	947.14	9.63%	
Sum Alt. L3B	4545.25	46.20%	

Two Landforms exceed the VQO. L4C is 7% above PR limit. L3B is a minor sliver and should be ignored. L4A is beetle exempt. L4B meets the PR VQO. When L4A, L4B, and L4C added together, including beetle exempt, Percent Alteration is 7.43%. Provide a few small WTRAs in CO7ZV to bring entire L2 into PR.

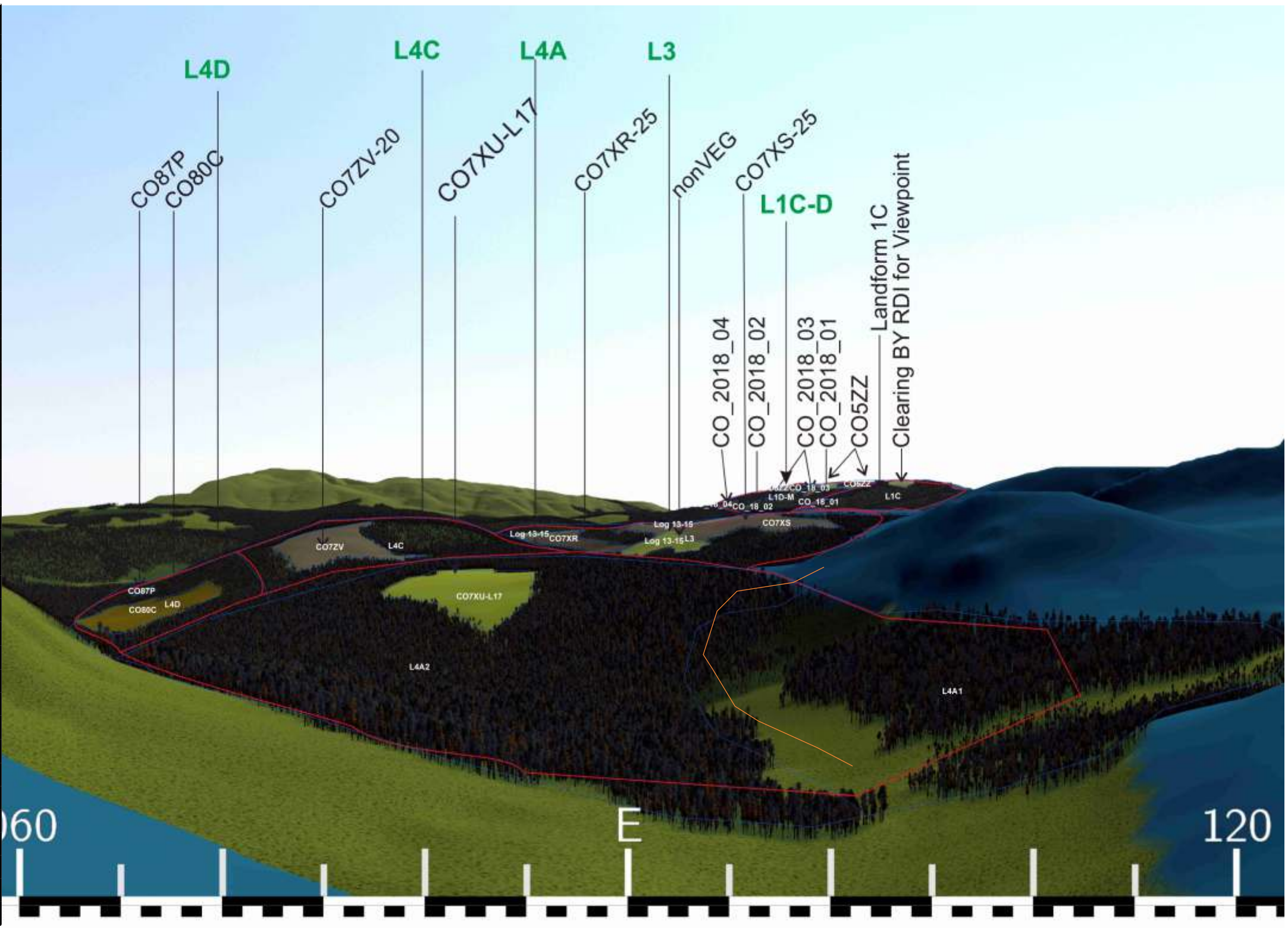
Deletions due to adjacency by BCTS: CO80A, CO80E, CO80D, and west half of CO80B in L1, and CO7XV and A705-74-2 in L4.





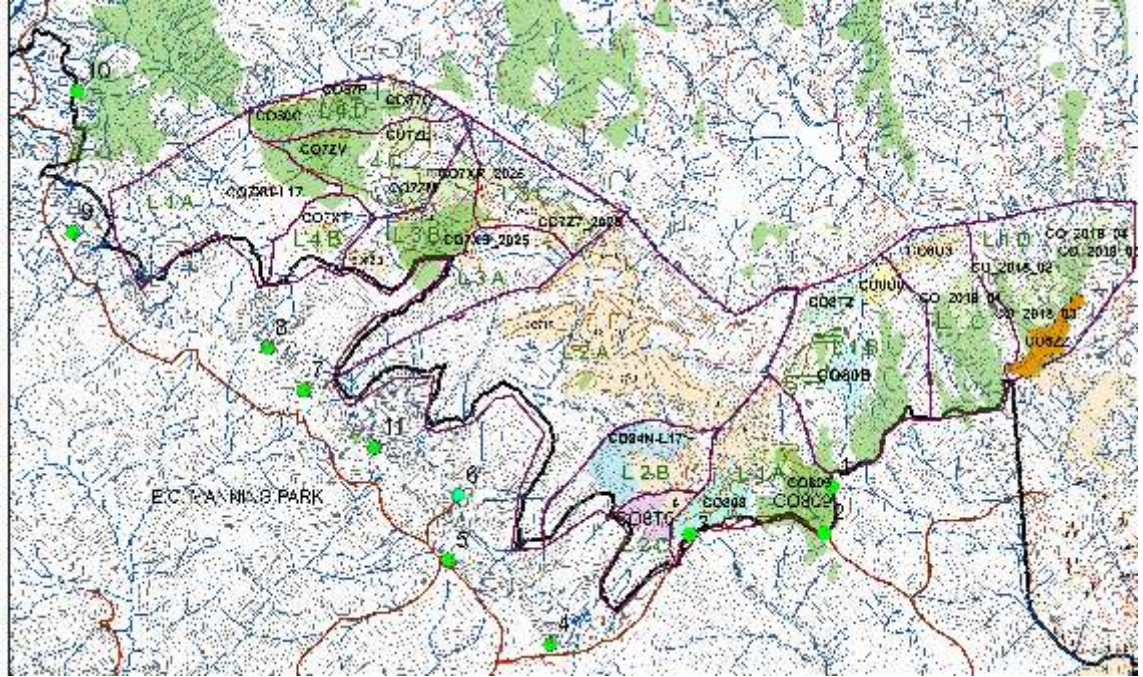
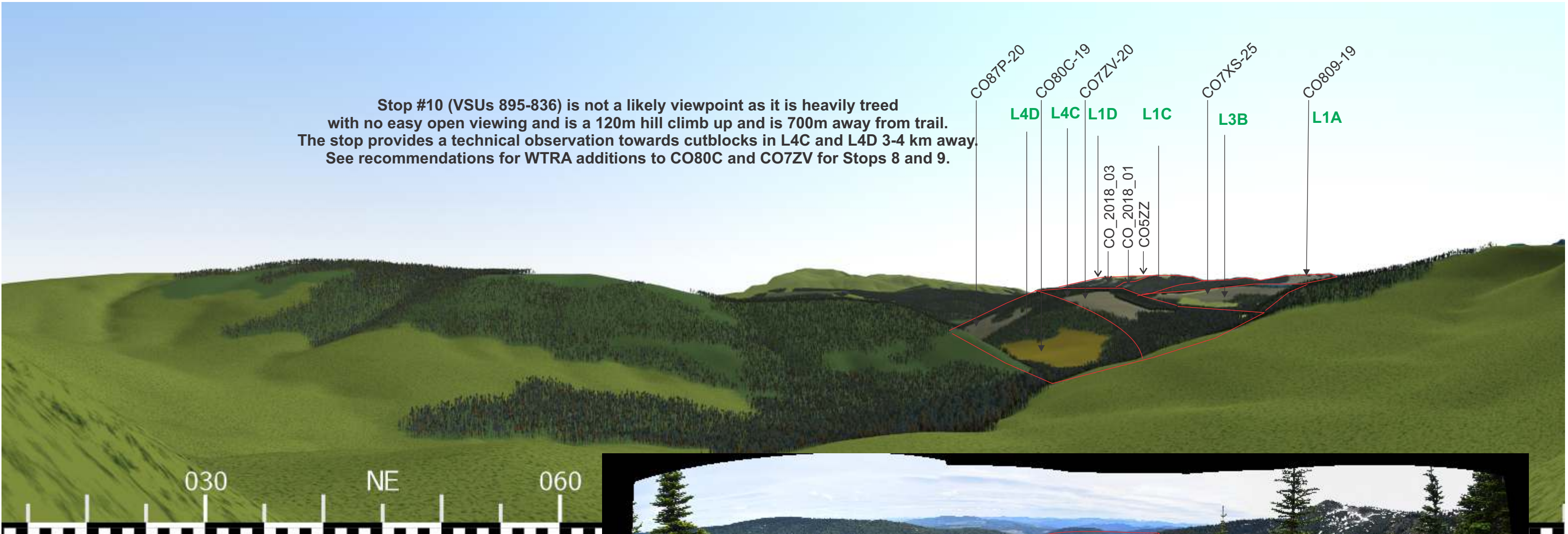
Stop #9 - 892-31 - called 892-32A in pix - 409-439 with Viewshed

Stop 9 Percent Alteration and Determination			
NAME	AREA2	% Alt.	Determination
L4A1	341460.12		VSU870-R. Meets R VQO - no alteration.
Sum Alt.	0.00	0.00%	
L4A2	436395.75		VSUs 863-844-866-PR. Meets PR.
CO7XU-L17	21982.62	5.04%	
Sum Alt L4A	21982.62	5.04%	
L4C	54397.11		VSU863-PR. Exceeds M.
CO7ZV	13082.50	24.05%	
Sum Alt L4C	13082.50	24.05%	
L4D	42368.53		No VSU. Would exceed M.
CO80C	11030.79	26.04%	
CO87P	289.87	0.68%	
Sum Alt L4D	11320.66	26.72%	
Full Landform L4A2+L4C+L4D (L1A1 removed from calculation due to Retention VQO):			
L4	533161.40		All PR in Group extended to L4D. Exceeds PR by 1.7%. Consider WTRAs in CO80C and CO7ZV
Sum Alt Group	46385.77	8.70%	
L3B	56230.06		VSU 875-M. VQO doubly exceeded. Existing alteration 10%, exceeding VQO. Deferral indicated of CO7XS or comparable portions of CO7XS and CO7XR.
CO7XS	9853.15	17.52%	
Log 13-15	3973.69	7.07%	
CO7XR	4930.83	8.77%	
Log 13-15	891.79	1.59%	
Log 13-15	291.01	0.52%	
Sum Alt L3	19940.47	35.46%	
L1C	13216.43		871-PR. Meets PR or better.
CO_18_01	132.55	1.00%	
Sum Alt L1C	132.55	1.00%	
L1D - M	10359.60		869-M. Exceeds M by 1.39%. 16 km in distance. All shapes acceptable for meeting M. Small variance in Percent Alteration acceptable.
CO_18_02	213.58	2.06%	
CO_18_03	636.33	6.14%	
CO_18_04	202.22	1.95%	
CO5ZZ	818.88	7.90%	
CO5ZZ	137.79	1.33%	
Sum Alt L1D	2008.81	19.39%	



Deletions due to adjacency by BCTS: CO80A, CO80E, CO80D, and west half of CO80B in L1, and CO7XV and A705-74-2 in L4.

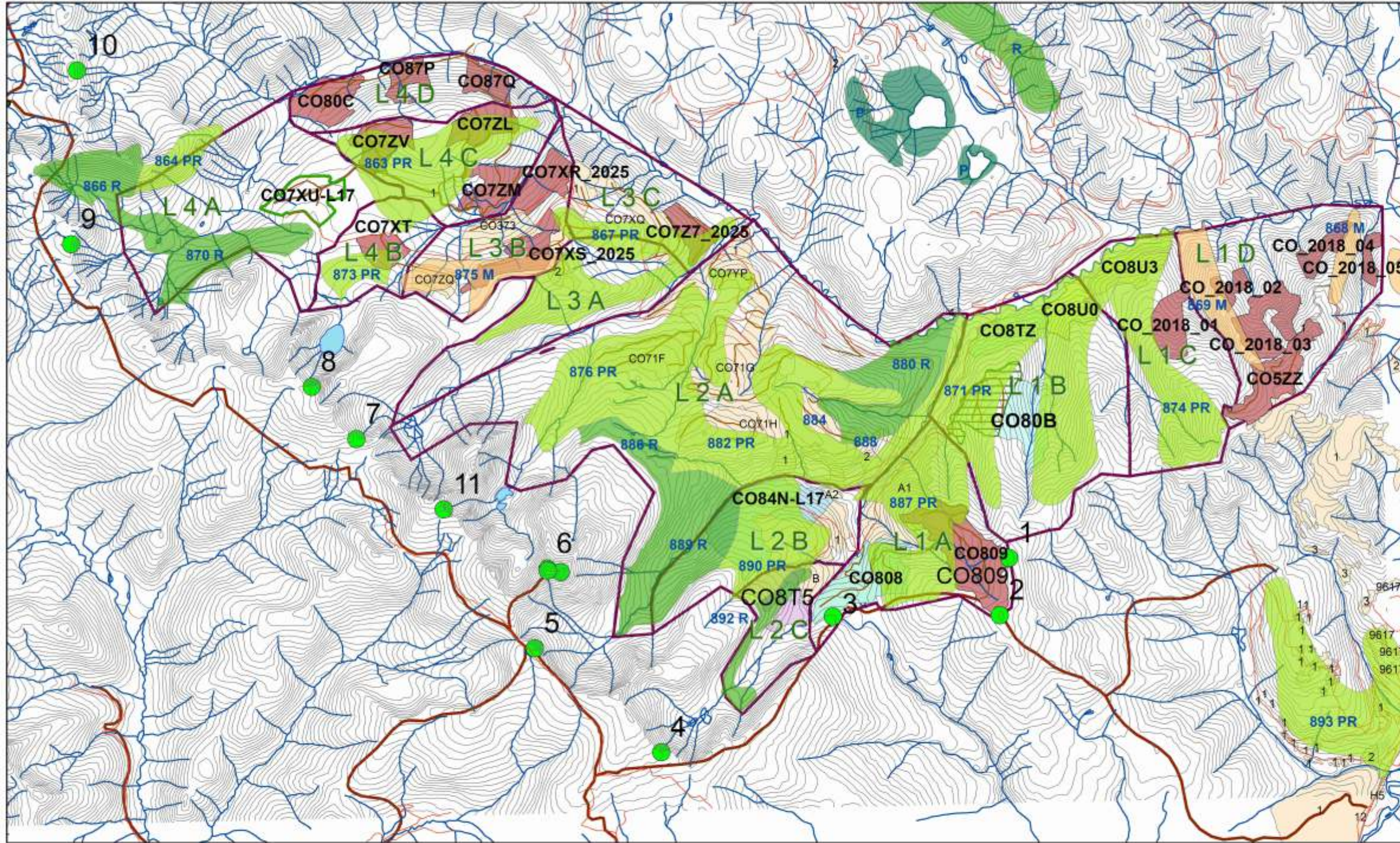
Stop #10 (VSUs 895-836) is not a likely viewpoint as it is heavily treed with no easy open viewing and is a 120m hill climb up and is 700m away from trail. The stop provides a technical observation towards cutblocks in L4C and L4D 3-4 km away. See recommendations for WTRA additions to CO80C and CO7ZV for Stops 8 and 9.



Viewshed



Stop # 10 with Viewshed



Copper 2018 - Visual Assessment
CascadesGarrisonScenicClip
REC_EVQO_C

- P
- R
- PR
- M
- Trim_Roads
- CTR_Clip
- Copper18Stopsall
- CO7XU-L17
- Garrison_Proposed_Roads
- Stop11Lakes
- Stop11_Lakes
- Stop8_Lake
- CO808
- CO5ZZ
- CO_2018_01_shapefiles_dec62018
- CO_2018_03_03_04_05_shapefiles_Dec6_2018
- CO80B_deferred
- Landforms2018
- Trim_Waterlines
- CO8U0
- Copper17-26
- CO80B_Final
- CO8U3-21
- CO8TZ_BLK
- L_Park Structures - Okanagan Region - Points
- L_Park Trails - Okanagan Region - Lines
- HarvestFten13-14
- CO809
- CO809-18
- co809_co8t5_wtra
- CO84N_BLK
- co809_co8t5_shp

Value

- 0
- 0 - 10
- CO7XU-L17



Copper Creek Visual Quality Objectives