

Legend

- CO7XU
- Landforms
- Trim_Roads
- CTR_Clip
- CO7ZM_Ret_00
- CO7ZV_Ret_00
- Copper17-26
- CO80A-21
- CO80E-21
- CO8U3-21
- CO8TZ_BLK
- Manning_Prov_Park
- CascadesGarrisonScenicClip**
- REC_EVQO_C**
- P
- R
- PR
- M
- XYCopper_Waypoints_27-JUN-18.csv_4
- L_Park Structures - Okanagan Region - Points
- L_Park Trails - Okanagan Region - Lines
- HarvestFten13-14
- CO809
- CO809-18
- co809_co8t5_wtra
- CO84N_STUN_ID_01
- CO84N_SU
- CO84N_BLK
- co809_co8t5_shp
- Trim_Waterlines
- BCGS_grid20K
- Garrison_Proposed_Roads
- RSLT_FC_NEW
- Hillshade**
- Value**
- High : 254
- Low : 0



Contents

1	Key Map
2	Contents
3	Composite Viewshed
4	Summary, Conclusions and Recommendations Part 1
5	Summary, Conclusions and Recommendations Part 2
6	Stop 6 Visual Simulation, Viewshed and Panoramic Photo
7	Stop 6 Percent Alteration
8	Stop 11 Visual Simulation, Viewshed and Panoramic Photo
9	Stop 11 Percent Alteration
10	Stop 8 Visual Simulation, Viewshed and Panoramic Photo
11	Stop 8 Percent Alteration
12	Stop 9 Visual Simulation, Viewshed and Panoramic Photo
13	Stop 9 Percent Alteration
14	Stop 10 Visual Simulation, Viewshed and Panoramic Photo
15	Stop 10 Percent Alteration

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

The following report and image document by RDI Resource Design Inc is an update to a four 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 concluded with a final assessment of December 10, 2018. That report is available at: http://rdi3d.com/BCTS/Copper_2018_RDI_Final_181214.pdf.

The current update pertains only to changes made by BCTS to cutblocks CO7ZV and CO7ZM in Landform 4. These changes, namely the addition of substantial reserves to reduce the visible scale of the cutblocks and improve their shape, were made in response to RDI’s recommendations in the 2018 report. 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.

This update for Landform 4 consolidates the earlier 4 subdivisions of the landform into a single unit for ease of interpretation, planning and management by BCTS. The assessment examines 5 elevated stops (viewpoints) accessed 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 landforms, and the visual influence of existing and proposed cutblocks within each landform as seen from the various viewing opportunities (Section 2), provides Results (Section 3) and makes Conclusions and Recommendations (Section 4). The report includes maps, viewsheds, photography, visual simulations, perspective percent alteration calculations from all 5 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 landforms and all cutblocks within them. The relevant coverage of Landform 4 for this update was restricted to Stops 6, 11, 8, 9, and 10, presented in that order travelling from Stop 6 northwest to Stop 10 as indicated on the key map (page 1). Individual viewsheds (what can be seen from each stop) are inserted on each Stop page of this report, and the composite viewshed is provided on page 3 to further assist in the confirmation of visibility in the Copper project area from Manning Park.

Stop 6 is at the head of First Brother Trail), Stops 11, 8, and 9 are on Heather Trail, and Stop 10 is off the Nicomen Trail. Safe landing locations were found as near as possible to the pre-selected points. Photo-panoramas were collected by me. The Manning 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 (Stops 8 and 11) likely draw unknown numbers of visitors away short distances from the trails to seek the views from 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:

- Stop 6. At First Brother Trailhead – broad panorama into Copper and beyond – cairns.
- Stop 11. 615m from Heather Trail - Ridgetop with view of cirque lake below and broad panorama beyond.
- Stop 8. 880m from Heather – ridgetop with cirque lake (tarn) feature below in view; panorama beyond.
- Stop 9. 340m from Heather – narrow view into upper Copper headwaters and beyond.
- Stop 10. 640m from Nicomen Lake Trail - narrow view into upper Copper headwaters – unlikely visitation.

In summary, 1 stop pertinent to this update report was on a main trail (Stop 6). Two stops have scenically significant cirque lake (tarn) feature, and two feature panoramas off-trail (11, 8). Stop 10 is likely of little or no interest and unlikely to draw visitors through the trees away from the trails. RDI has provided simulations and analyses from all of these stops in the report.

2. Landforms as Related to Visual Sensitivity Units

Existing Visual Landscape Inventory (VLI) has delineated 5 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.

There are two categories of visual alteration for the established VQOs within Landform 4: Retention, and Partial Retention. The prevailing VQO influencing the landform is Partial Retention (VSUs 863, 864 and 873), as depicted in light green on the VQO map seen on the key map (page 1). Two Retention VQO polygons (866 and 870), depicted in dark green on the key map, are also found in Landform 4, but do not contain any existing or proposed development and are excluded from any calculations. THE VSUs are summarized in the following table:

Visual Sensitivity Units in Landform 4					
Landform	Visual Sensitivity Unit				
	873 PR	863 PR	870 R	866 R	864 PR
Landform 4					
VSU #863 (PR) contains CO7ZL, CO7ZV, and a small portion of CO7ZM. VSU #873 (PR) contains CO7XT (Stop 8). Existing CO7XU sits outside of any VSU. No alterations in VSU #864. Retention VSUs 866 and 870 have no alterations and are excluded from calculations. RDIs general recommended Visual Quality Class for Landform 4 is Partial Retention.					

According to the training procedures by the Ministry of Forests, Natural Resources and Rural Development (FLNRORD), Landforms require that each specific VQO be adhered to, if evident in the view, to ensure that the legal objectives are met. Landform 4’s VSUs have extensive gaps in their coverage within the landform, awhile 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 adopted the neighbouring VQO of Partial Retention for these areas. The viewshed maps further identify and confirm the visual coverage from the coverage seen from each 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.

The 5 stops variously reveal the following cutblocks (see table below).

Landform	Cutblock	Field Photo Stop Number				
		6	11	8	9	10
Landform 4	CO7XU-L17			v	v	
	CO7XT			v-s		
	CO7ZL	v	v	v-s		
	CO7ZM	v	v	v		
	CO7ZV	v		v	v	v
	CO87Q					
	CO80C				v	v-l
	Logged 13-14	v-s		v-s		
	CO87P				v-s	v
Code	v-l: visible-large					
	v-vl: visible - very large					
	v: visible					
	v-s: visible - small					

The codes indicate the relative scale of each cutblock in the landform from each Stop.

3. Results

Each stop is addressed in geographic sequence, followed by a summary table of Percent Alteration:

Stop 6

Stop 6 is at the First Brother Trailhead in open alpine. It is likely a high-use viewpoint. Landform 4 is seen ranging from 3.7km to 6.2km in the middle to far midground. The view contains CO7ZV, CO7ZM and CO7ZL. They are small, well-shaped and approximately 6000m away. The results are presented in the Stop 6 Percent Alteration and RDI Determination Table page. **Percent Alteration is 5.25%, meeting PR.**

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 nearby. Cutblocks in Landform 4 are between 4300m to 5300m away, well-shaped and very small. **Percent Alteration is 5.74%, meeting PR.**

Stop 8

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 4 centrally in close midground, 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, and greatly reduced in scale now that the reserves have been added by BCTS, following RDI's recommendation in the previous report the "both cutblocks would benefit from WTRAs to reduce their scale". In this focal view, a tiny portion of CO7ZL and existing cutblock CO7XU (logged 2017) are visible in the landform. **Percent Alteration is 4.55%, meeting PR.**

Stop 9

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. Landform 4 contains proposed cutblocks CO7ZV, CO87P, CO80C, and existing CO7XU. RDI recommended the addition of WTRAs in CO7ZV in the previous report to enable Landform 4 to meet the PR VQO. **Percent Alteration is 5.8%, meeting PR.**

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. **Percent Alteration is 27.43%, clearly failing to meet PR.** The view location is definitely off-trail and likely never to be visited. RDI recommends ignoring the Percent Alteration results but supports the inclusion of the stop for informational purposes to provide visual coverage of the east-facing cutblock CO87C.

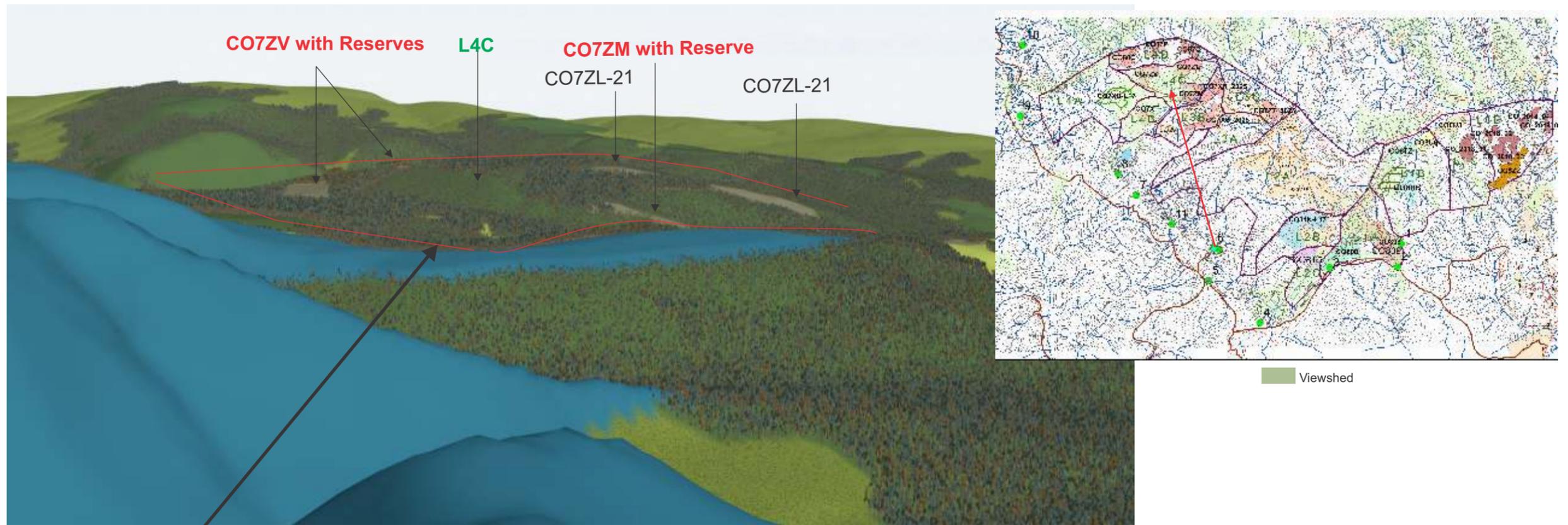
Percent Alteration Landform 4	
Stop	Percent Alteration
Stop 6	5.25%
Stop 11	5.74%
Stop 8	4.55%
Stop 9	5.58%
Stop 10	27.43%

4. Conclusions and Recommendations

BCTS has very adequately responded to RDIs recommendations in the previous report to add WTRAs to the cutblocks in Landform 4 in order to reduce the scale and enable the VQO of Partial Retention to be met from the viewpoints. The new reserves provide substantial reduction in scale while serving to greatly improve cutblock shapes. Those responsible for the revised layout are to be congratulated as the change will ensure visual quality is enhanced.

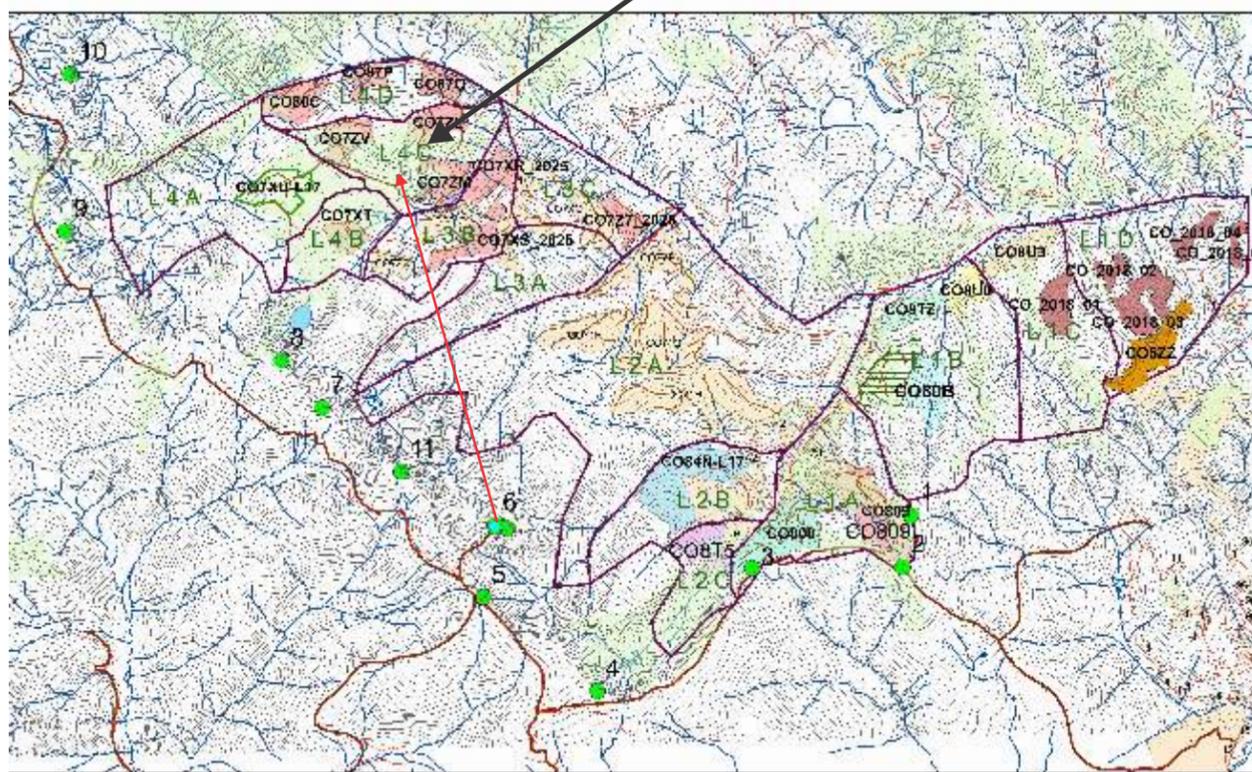
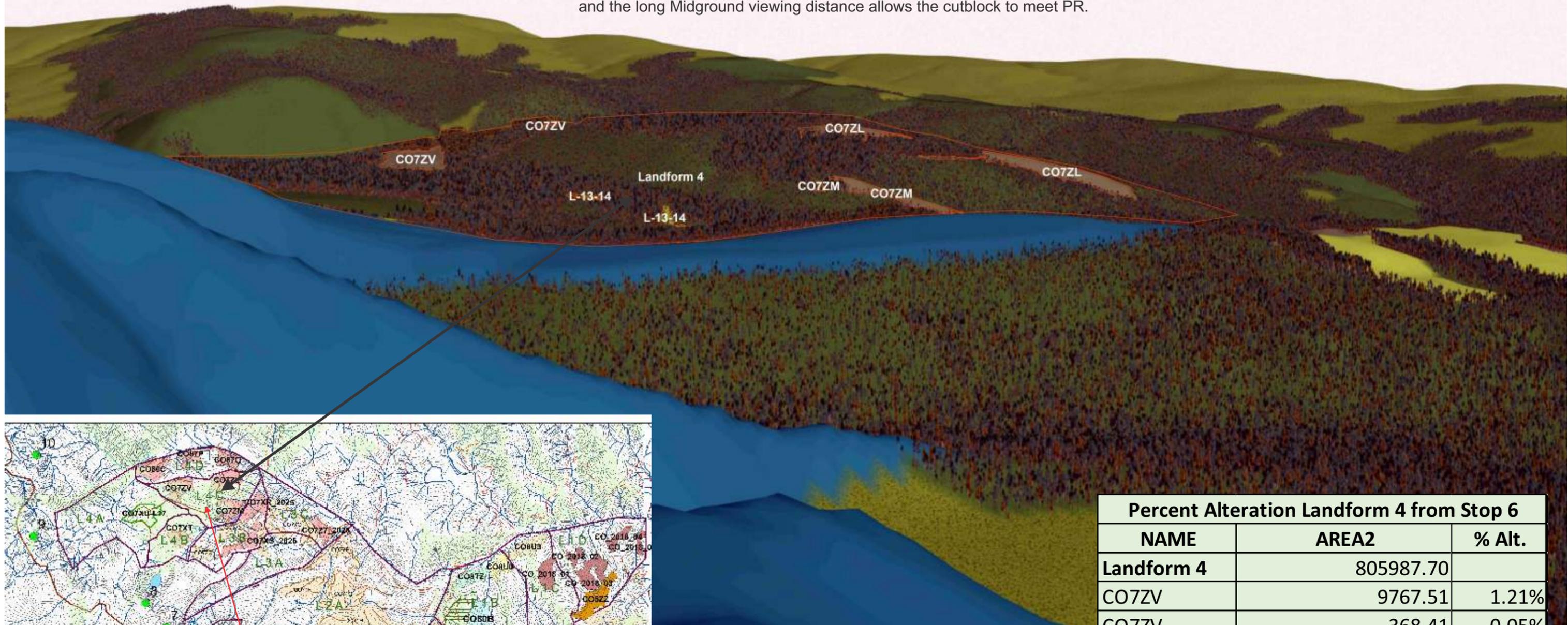


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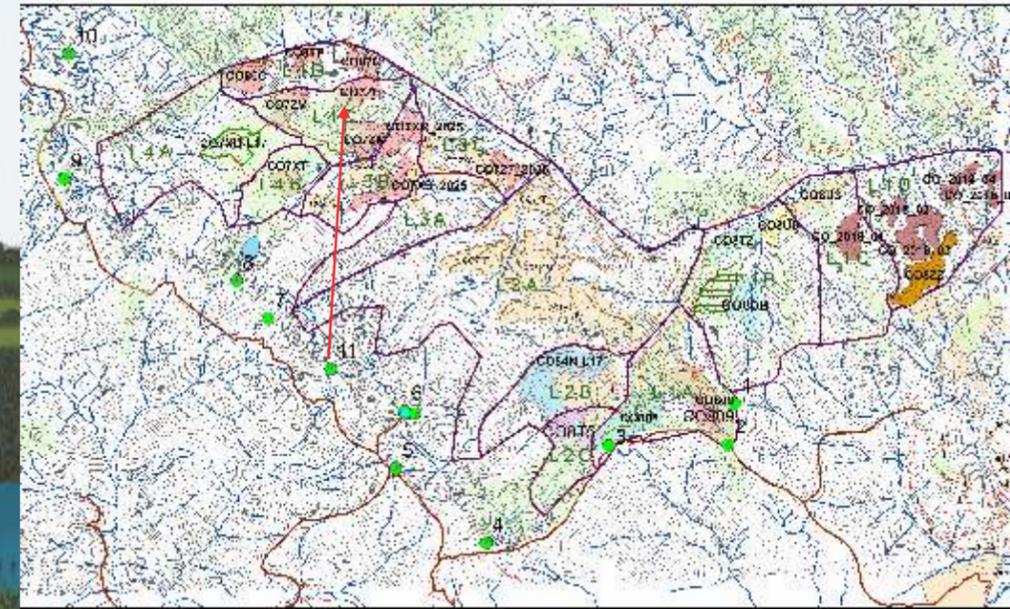
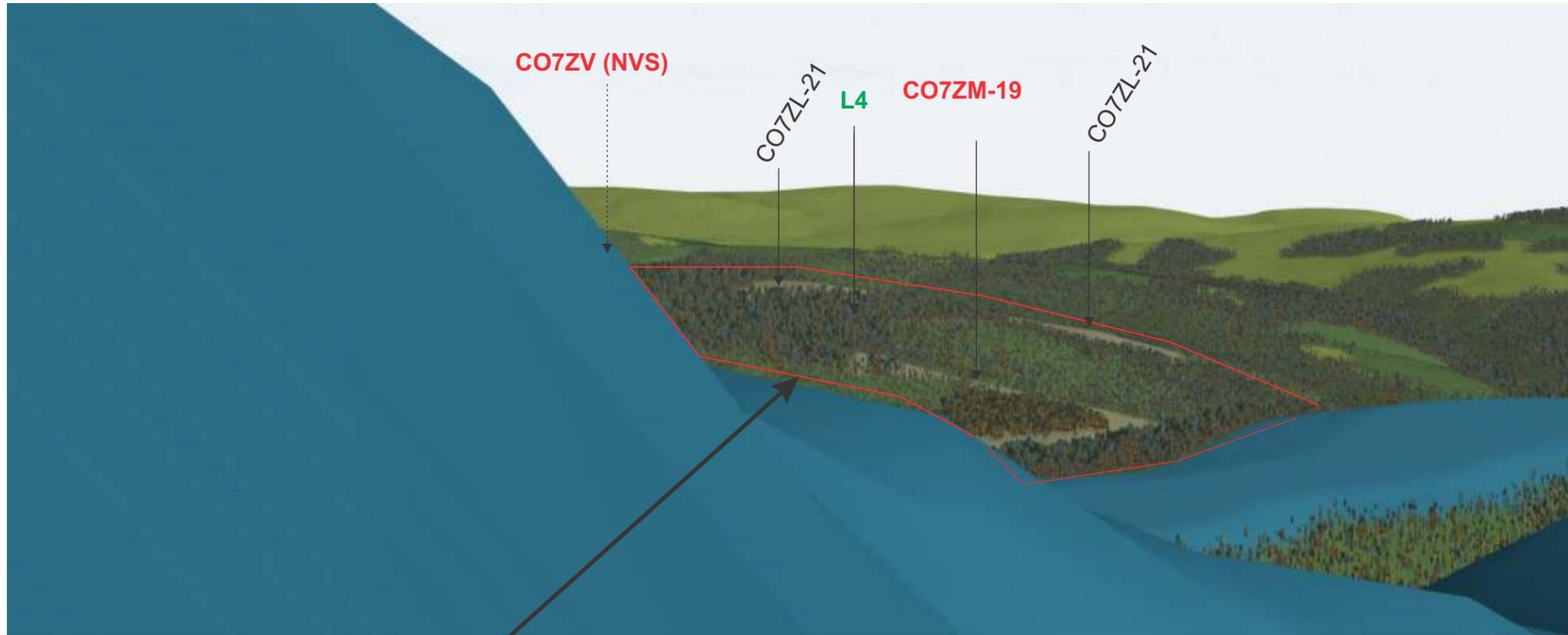


Landform 4 meets Partial Retention Visual Quality Class by Percent Alteration and Design Attributes.
 The configurations of CO7ZV and CO7ZM with added reserves have undulating edges and follow visual forces.
 Seen in near to far Midground (4km to 6km) viewing distance. Simulation has 40 degree field of view and 48mm lens.
 See photo on prior page for relative position and scale in the panoramic view from Stop 6.

CO7ZV is somewhat angular, but is very small in scale (1.21% of landform)
 and the long Midground viewing distance allows the cutblock to meet PR.



Percent Alteration Landform 4 from Stop 6		
NAME	AREA2	% Alt.
Landform 4	805987.70	
CO7ZV	9767.51	1.21%
CO7ZV	368.41	0.05%
CO7ZL	16900.85	2.10%
CO7ZL	4713.41	0.58%
CO7ZM	8208.53	1.02%
L-13-14	1439.90	0.18%
L-13-14	903.55	0.11%
Sum Alt.	42302.15	5.25%



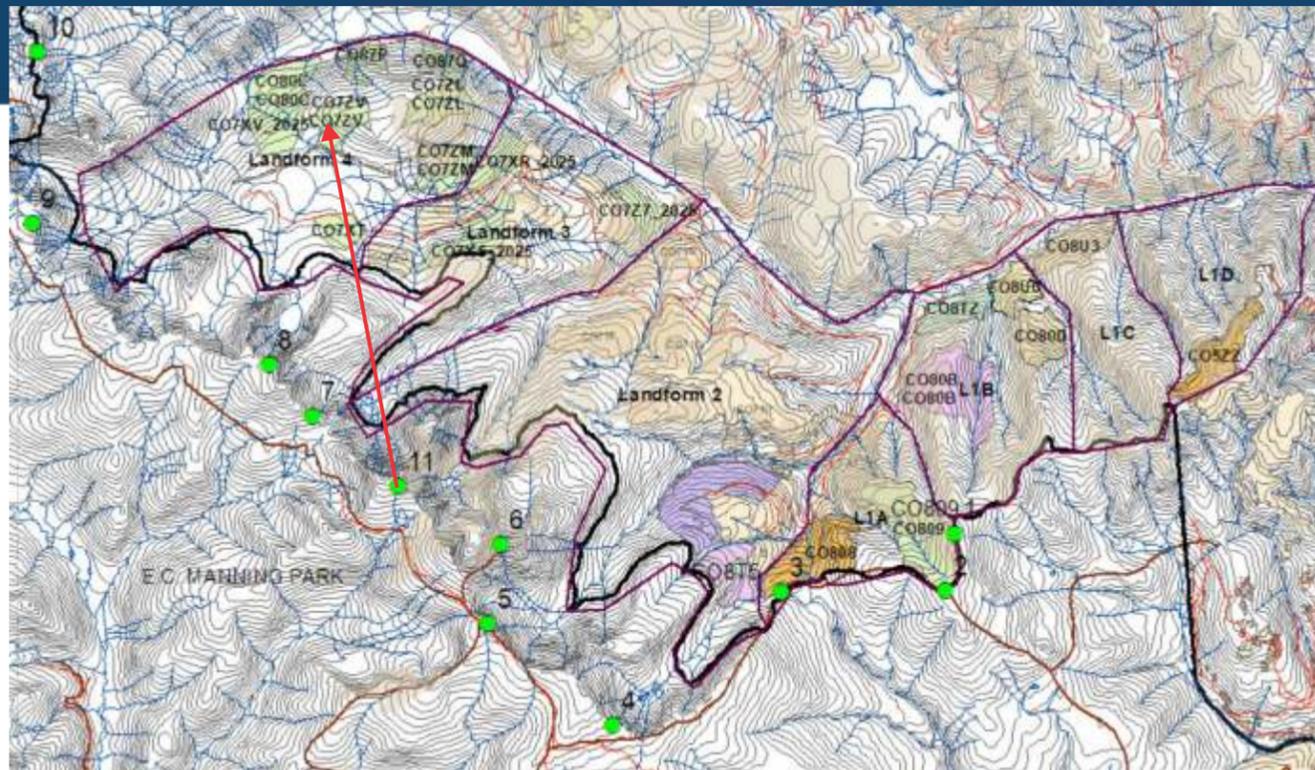
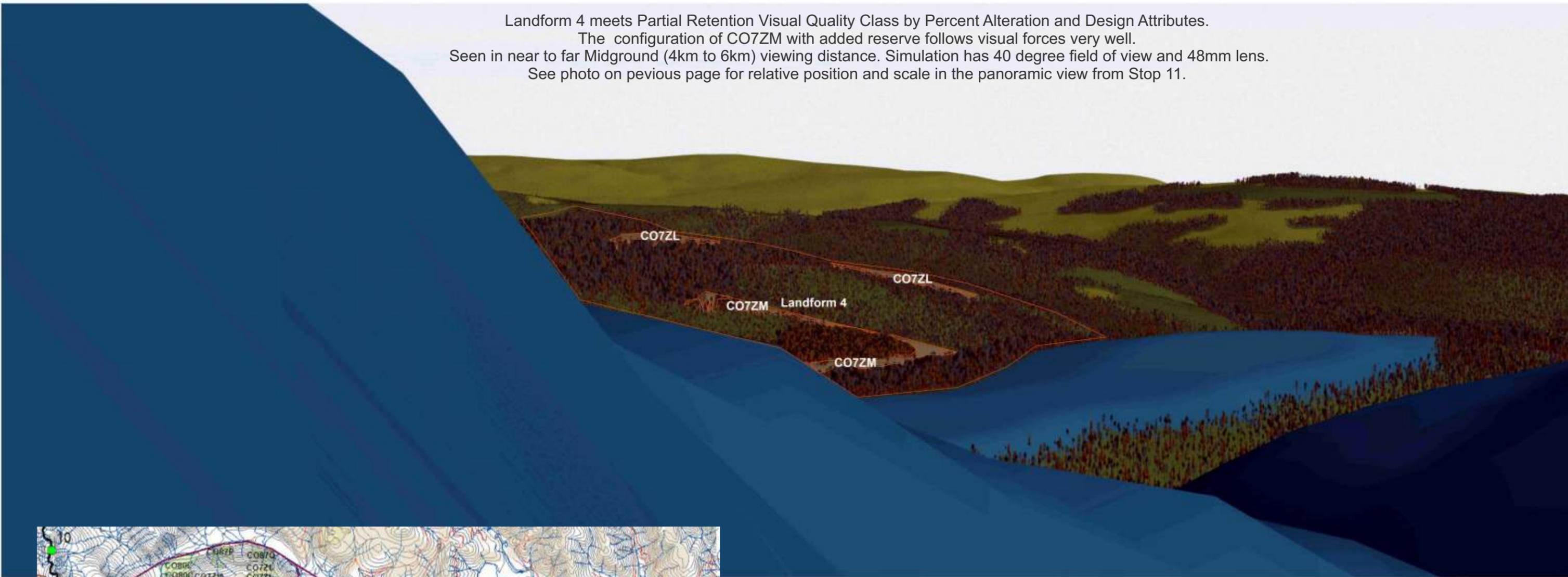
Viewshed



Scenic tarn feature in foreground.

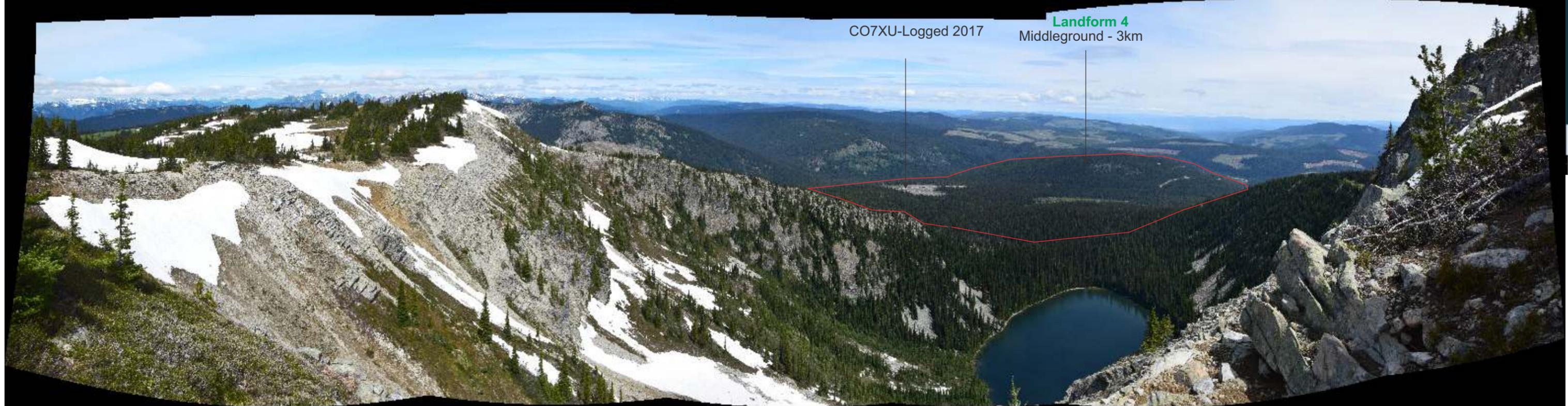
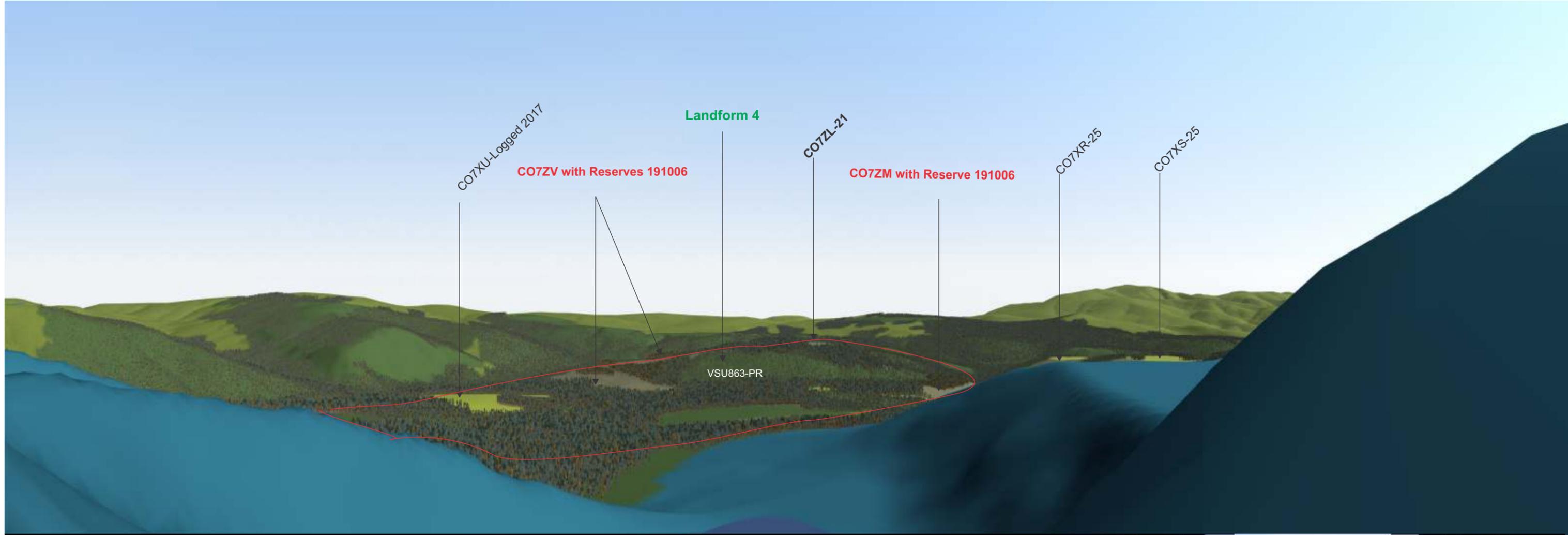
Stop #11 - CO7ZV (NVS) and CO7ZM with Reserves

Landform 4 meets Partial Retention Visual Quality Class by Percent Alteration and Design Attributes.
 The configuration of CO7ZM with added reserve follows visual forces very well.
 Seen in near to far Midground (4km to 6km) viewing distance. Simulation has 40 degree field of view and 48mm lens.
 See photo on previous page for relative position and scale in the panoramic view from Stop 11.



Percent Alteration Landform 4 from Stop 11		
NAME	AREA2	% Alt.
Landform 4	488766.93	
CO7ZL	5110.78	1.05%
CO7ZL	5477.41	1.12%
CO7ZM	7022.62	1.44%
CO7ZM	10466.19	2.14%
Sum Alt.	28077.00	5.74%

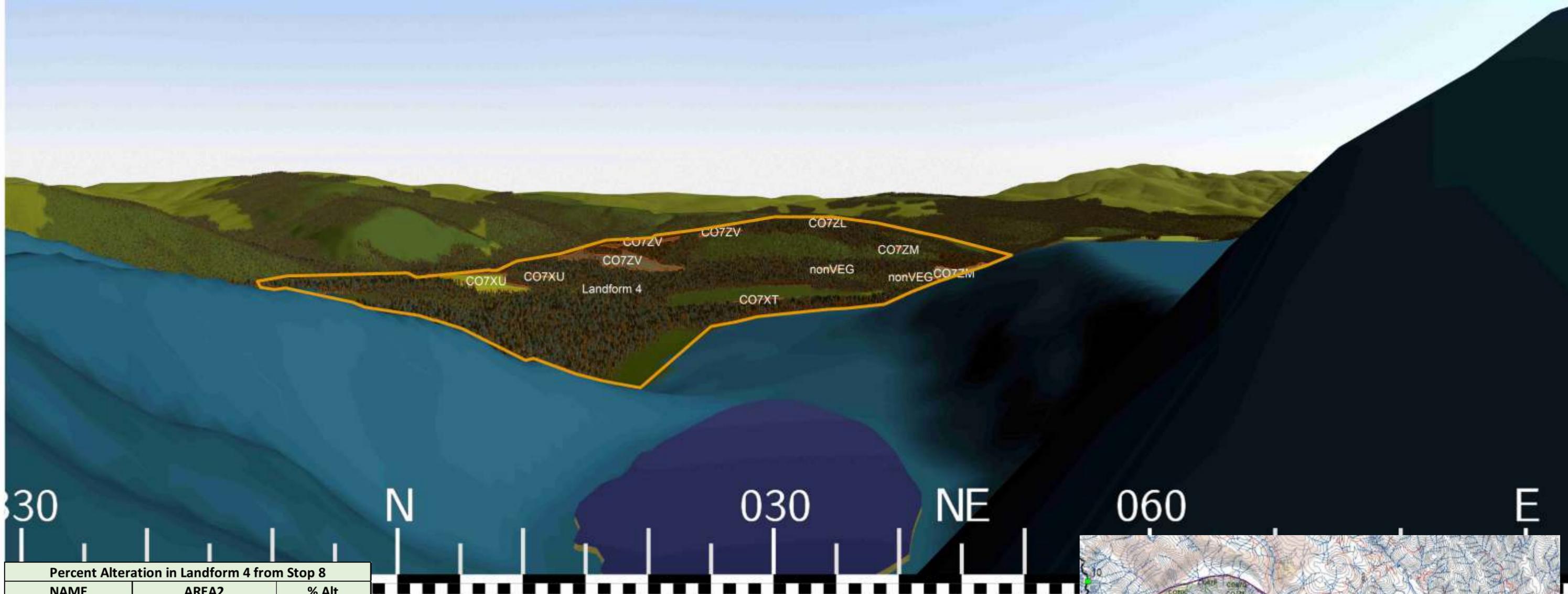
Stop #11 - Percent Alteration Landorm 4



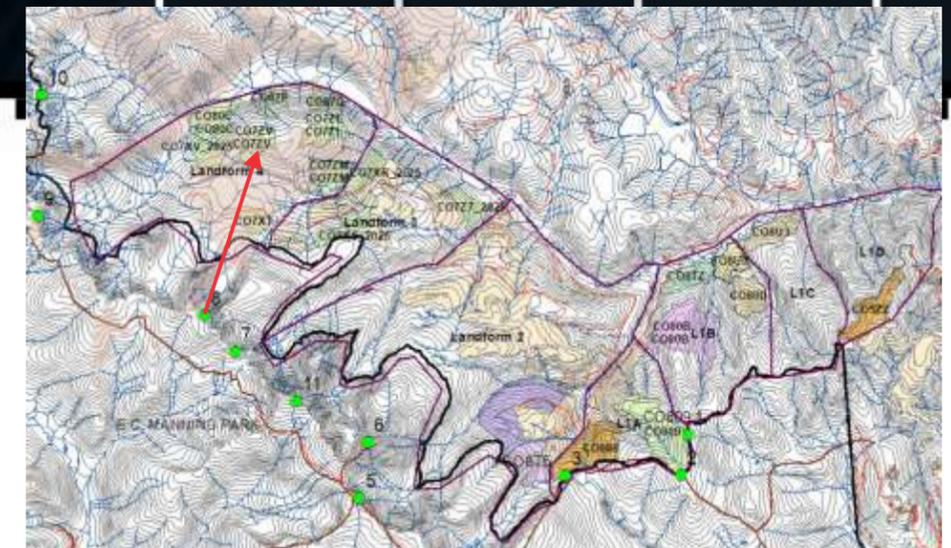
Scenic tarn feature in foreground.

Stop #8 - CO7ZV and CO7ZM with Reserves

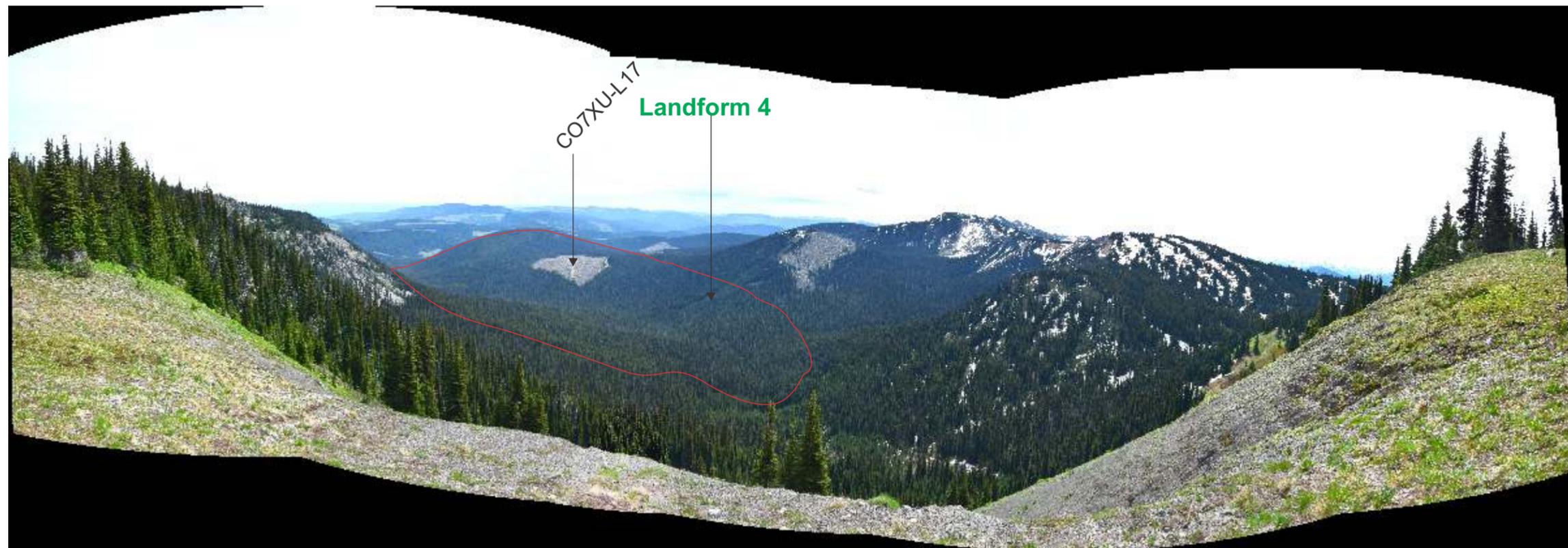
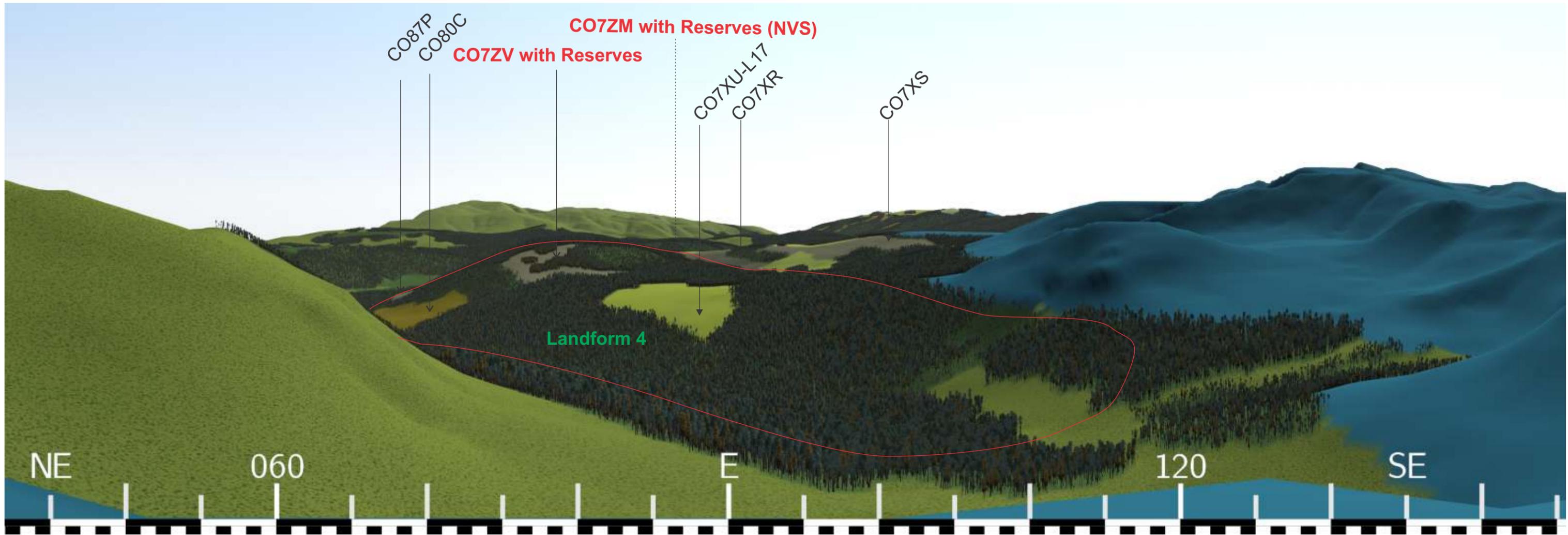
Landform 4 meets Partial Retention Visual Quality Class by Percent Alteration and Design Attributes.
 The configurations of CO7ZV and CO7ZM with added reserves have undulating edges and follow visual forces.
 Seen in Midground (2km to 3.6km) viewing distance. Simulation has 45 degree field of view and 42mm lens.
 See photo on prior page for relative position and scale in the panoramic view from Stop 8. Scenic tarn feature in foreground.



Percent Alteration in Landform 4 from Stop 8		
NAME	AREA2	% Alt
Landform 4	543190.51	
CO7XU-L4A	7483.69	1.38%
CO7XU-L4A	313.53	0.06%
CO7ZV_19	9801.46	1.80%
CO7ZV_19	1900.62	0.35%
CO7ZV_19	498.57	0.09%
CO7ZM-L4C	2866.54	0.53%
CO7ZM-L4C	172.47	0.03%
CO7ZL-L4C	369.42	0.07%
nonVEG-L4C	498.98	0.09%
nonVEG-L4C	344.01	0.06%
CO7XT-L4B	461.40	0.08%
Sum Alt Landform 4	24710.71	4.55%

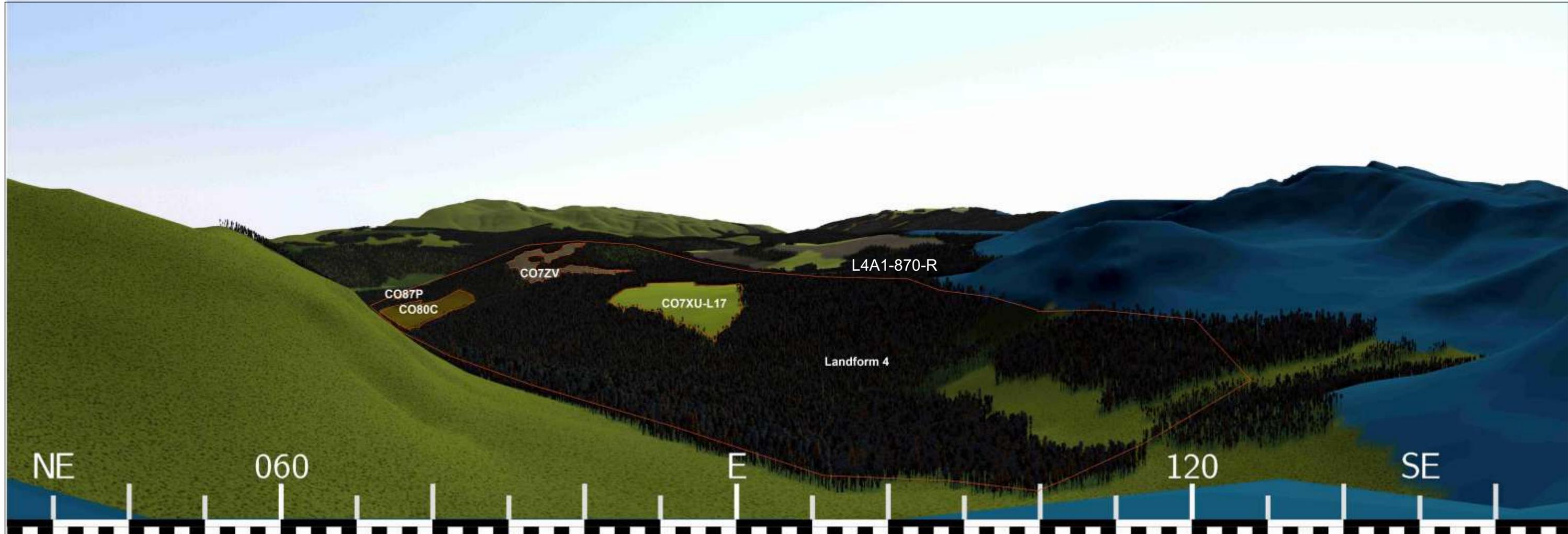


Stop # 8 Percent Alteration, RDI Determination, and Viewshed

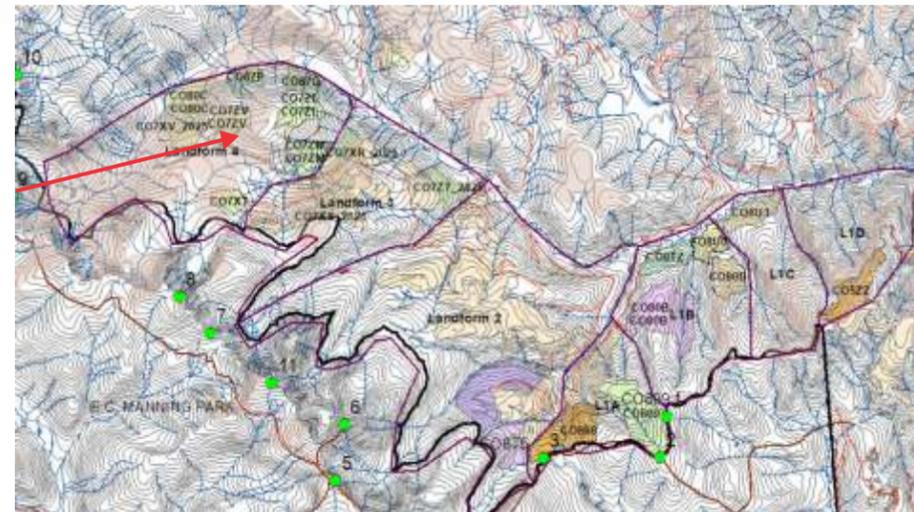


Stop #9 - CO7ZV and CO7ZM (NVS) with Reserves

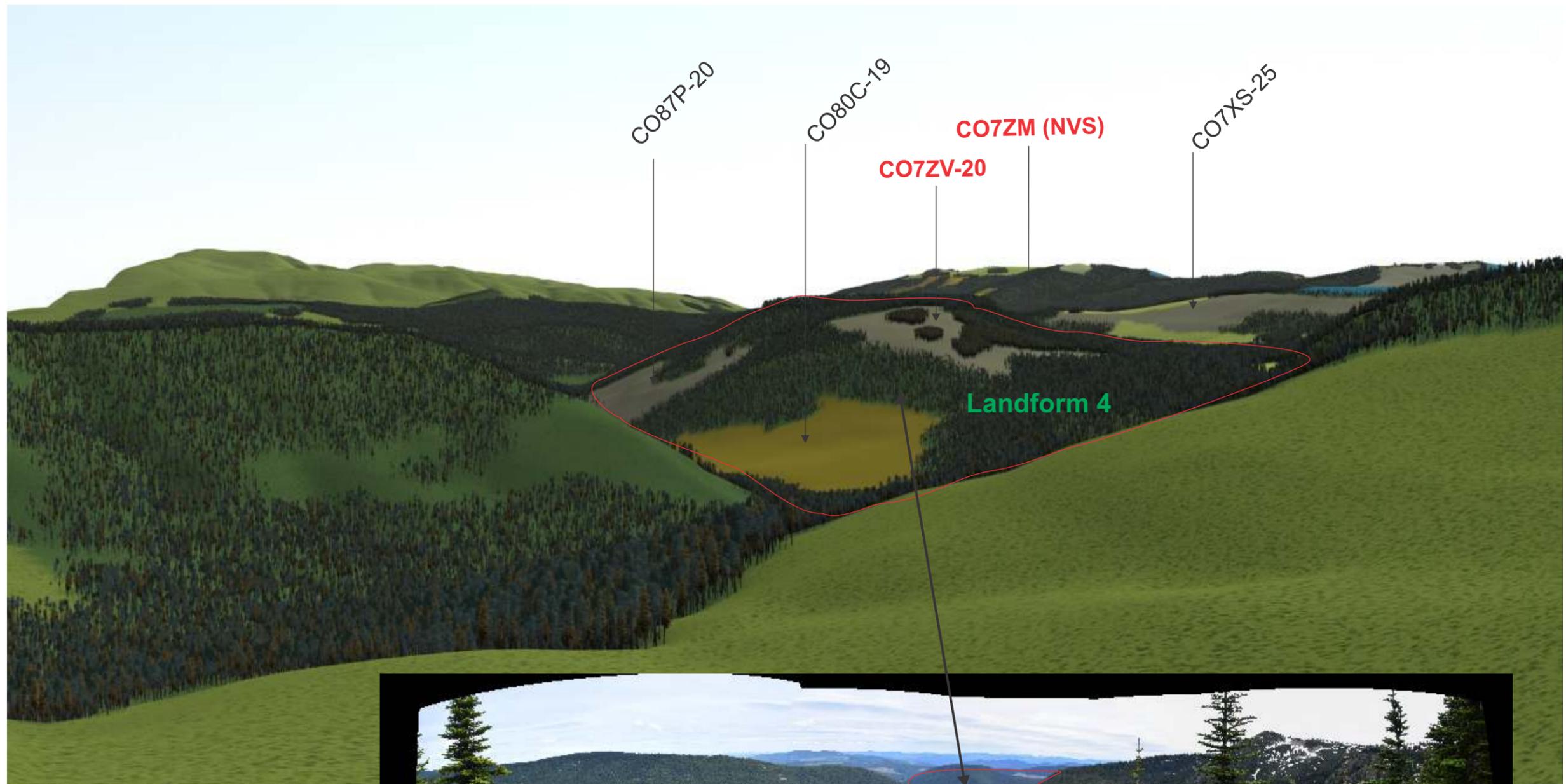
Landform 4 meets Partial Retention Visual Quality Class by Percent Alteration and Design Attributes. The configuration of CO7ZV with added reserves is undulating and follows visual forces. Landform seen in Foreground (1km) to Midground (5km) viewing distances. Simulation has 45 degree field of view and 42mm lens. See photo on prior page for relative position and scale in the panoramic view from Stop 9.



Percent Alteration Landform 4 from Stop 9		
NAME	AREA2	% Alt
Landform 4	1277173.85	
CO7ZV	12532.26	0.98%
CO80C	15530.39	1.22%
CO87P	631.16	0.05%
CO7XU-L17	42560.01	3.33%
Sum Alt	71253.82	5.58%



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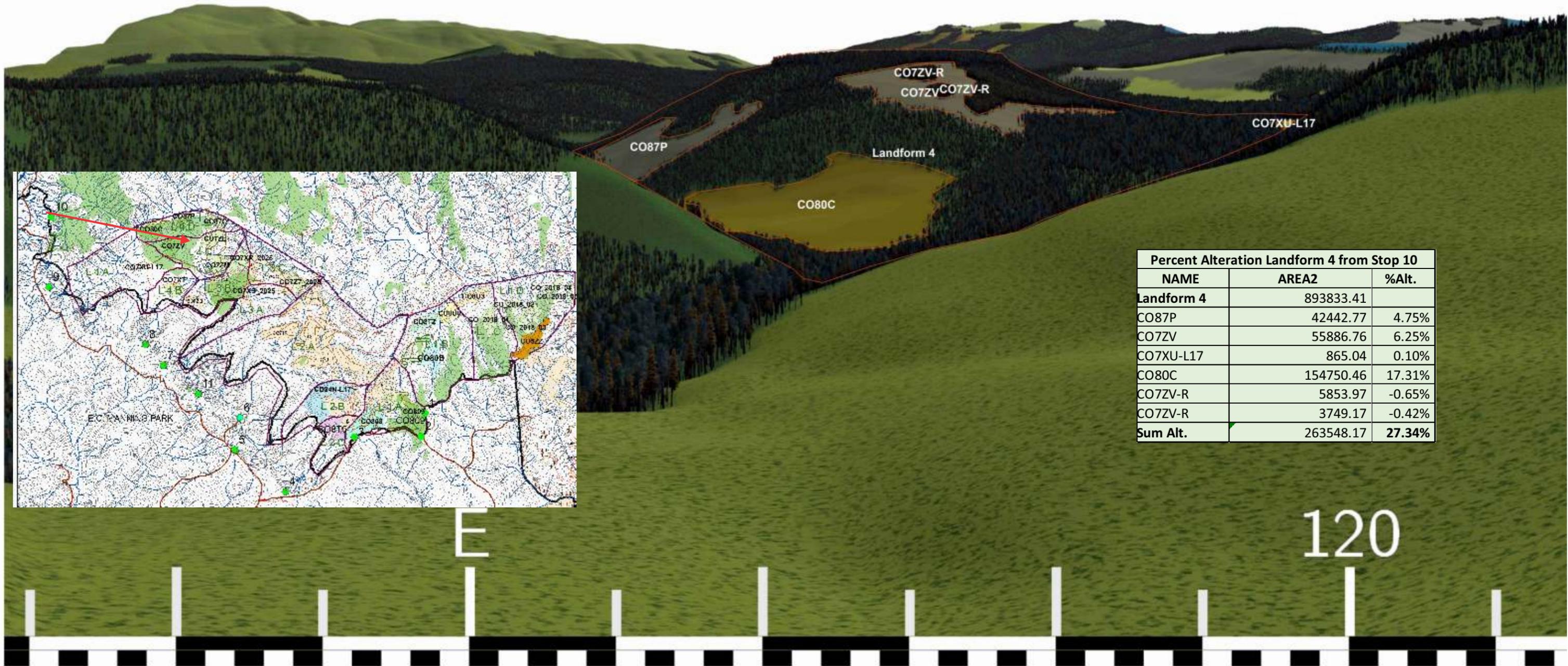


Viewshed



Stop #10 - CO7ZV and CO7ZM (NVS) with Reserves

Landform 4 greatly exceeds Partial Retention Visual Quality Class as seen from Stop 10 by Percent Alteration and Design Attributes. The onfiguration of CO7ZV with added reserves has much undulation and follows visual forces. Seen in Midground (3km to 4.5km) viewing distance. Simulation has 45 degree field of view and 42mm lens. See photo on previous page for relative position and scale in the panoramic view from Stop 10. The Stop is off-trail and is unlikely to be visited. 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 Landform 4.



Percent Alteration Landform 4 from Stop 10		
NAME	AREA2	%Alt.
Landform 4	893833.41	
CO87P	42442.77	4.75%
CO7ZV	55886.76	6.25%
CO7XU-L17	865.04	0.10%
CO80C	154750.46	17.31%
CO7ZV-R	5853.97	-0.65%
CO7ZV-R	3749.17	-0.42%
Sum Alt.	263548.17	27.34%

Stop #10 - CO7ZV and CO7ZM (NVS) Percent Alteration