

Connectivity within and beyond the Hellroaring Basin Improvements Project Analysis Areas for Wildlife

The analysis of forested connectivity looked at connections provided by and between areas of pole-sized and older forests. Special attention was paid to forested connections between old growth forests and along riparian zones and major and minor ridgelines. Refer to Exhibits 12-04, 12-07, and 12-20 for additional information on cumulative effects on wildlife.

Method:

See exhibits 12-10, 12-11, and 12-13 for information about the field survey, vegetation, and old growth data used for this analysis. Connections beyond the analysis area used for most wildlife species and habitats were evaluated by use of aerial imagery and information provided by Montana DNRC. Individually evaluated all areas of vegetation clearing that would regenerate forested stands (new ski runs, new clearing for ski lifts) by their spatial arrangement, paying particular attention to old growth habitats, riparian areas, and ridgelines. For travel distances across areas of regeneration treatment, looked for new openings that would have any area over 600 feet wide and measured the longest distance to cross that opening. See Exhibit 12-11 for an explanation for the 300-foot width applied to corridors for wildlife movement.

Existing Condition:

Some forested connections between old growth patches have been narrowed or severed by past timber harvest (see Maps 1 through 3 below). All patches of old growth habitat within and adjacent to the analysis areas used for wildlife for this project are connected via pole-sized or older forested habitat. Scattered across the analysis area are patches of early-seral/structural stage habitat that require travels of as much as 1.4 miles to cross in some directions. Landscape-wide data based on ecological sub-region data metrics for connectivity appear to illustrate local trends in the distances between patches of younger stands and between patches of older forests (Exhibit 12-11). Connectivity between areas of riparian habitats is shown on Maps 1 and 4 below. All areas of riparian habitat within and adjacent to the wildlife analysis areas are connected by forested habitat. Across the Lakalaho LAU, a mosaic of stands exist as travel corridors providing connectivity for lynx (see Maps 5 and 6 below). The area has the potential to provide connectivity or linkage between larger areas of lynx habitat (Squires, et al. 2013).

Effects:

Several aspects of the design of the Hellroaring Basin Improvements Project worked in concert to reduce effects on wildlife connectivity. These include:

- The inherently linear and narrow nature of ski runs and clearings for ski lifts.
- Design of runs, gladed areas to reduce impacts on inter-trail islands for lynx (Map 8 below) and on patches of old growth habitat.

Exhibit 12-09
Hellroaring Basin

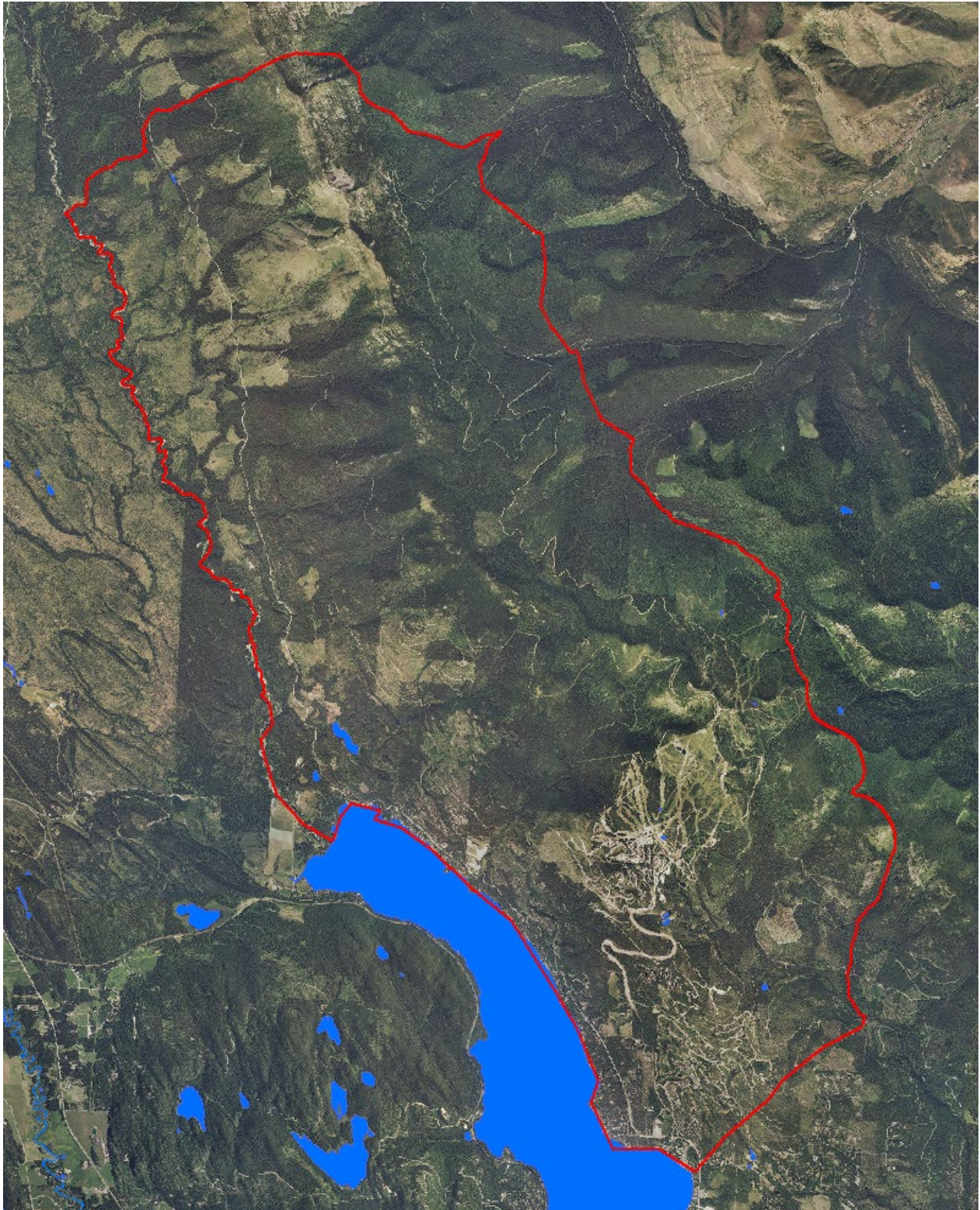
- Buffering of Riparian Management Zones (RMZs) from vegetation removal, where feasible.
- Consideration of cover in areas adjacent to proposed clearing.
- Snag and downed wood retention (see project design features).

Clearing for ski runs and lift lines would affect forested connectivity in 10 areas (Maps 7 and 9). In 3 additional areas, a new ski run next to an existing ski run would generate openings of 225, 250, and 300 feet in width. Consistent with FW-GDL-RMZ-09 (p. xx), the distance to cover inside riparian management zones would be less than 350 feet and vegetation would continue to provide wildlife habitat structural diversity, connectivity, and cover. Connectivity between riparian and upland habitats would be maintained within and between watersheds. No new areas of clearing would be over 600 feet wide. Thinning for gladed areas would retain forested habitat connectivity.

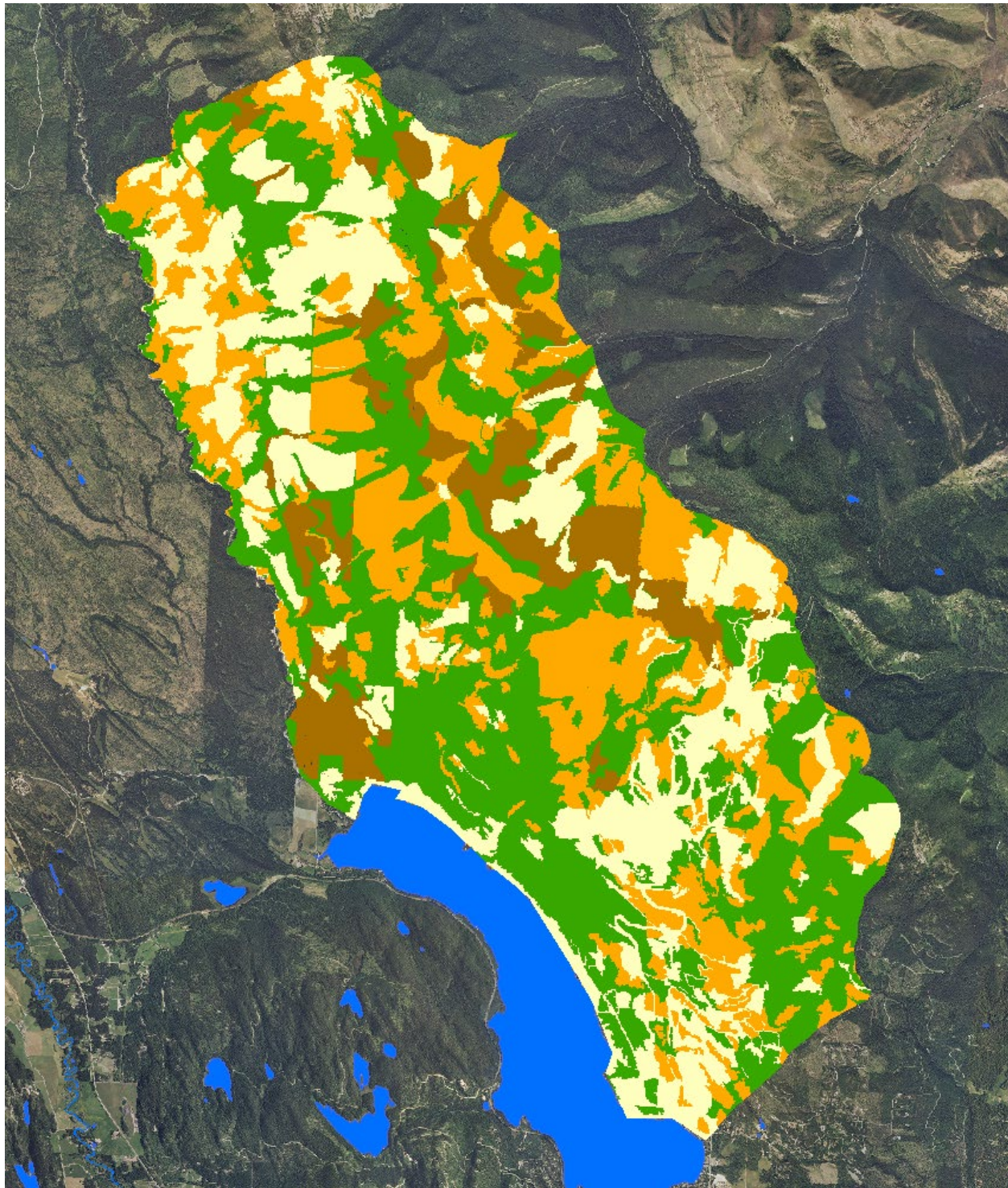
The proposed action alternative would permanently remove hiding and thermal cover from about fifty acres and reduce the effectiveness of cover on about sixty acres. This would alter forested connections to a small extent, however the proposed ski runs were carefully shaped to maximize the availability and proximity of forested cover. Abandonment of the Purgatory Run and the lower portion of the Hell Fire Run would increase forested connectivity and security in the lower part of the basin (Map 7). Leaving large trees in the gladed and feathered areas, as well as much of the larger-diameter snag and downed-wood, would provide some level of connectivity.

The ability of species like Canada lynx to travel across the Lakalaho LAU would be affected to a minor degree by clearing and thinning for ski area expansion and to a somewhat greater degree by ongoing human uses, but the area would maintain the potential to provide connectivity or linkage between larger areas of habitat. No major ridgeline or riparian connections would be affected. A mosaic of stands would still exist as travel corridors and would maintain connectivity for lynx. Forest patterns would continue to contribute to lynx habitat connectivity within and between home ranges, and dispersal between populations (FW-DC-TE&V-19; guidelines HU G3, HU O2, and HU O4; and Objective All O1). Limited vegetation removal would occur in riparian management zones and cover conditions in riparian management zones would still contribute to habitat connectivity for lynx (FW-DC-RMZ-06).

Map 1. Connectivity within and near the Hellroaring Basin Improvements Terrestrial Wildlife Analysis Area shown by NAIP Satellite Imagery

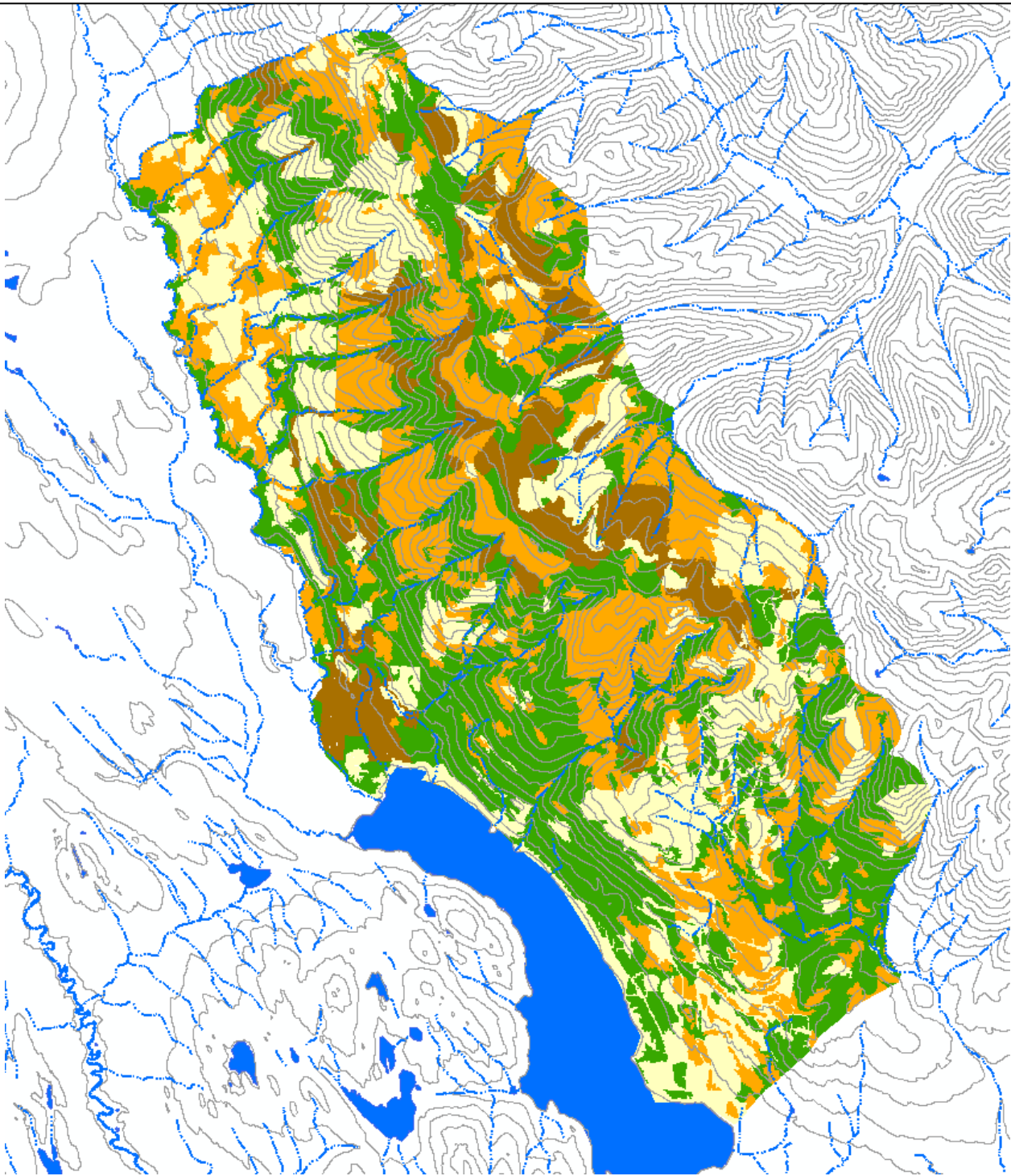


Map 2. Connectivity within and near the Hellroaring Basin Improvements Terrestrial Wildlife Analysis Area shown by NAIP Satellite Imagery, Old growth data (Exhibit 12-11), and Vegetation Data (Exhibit 12-10)



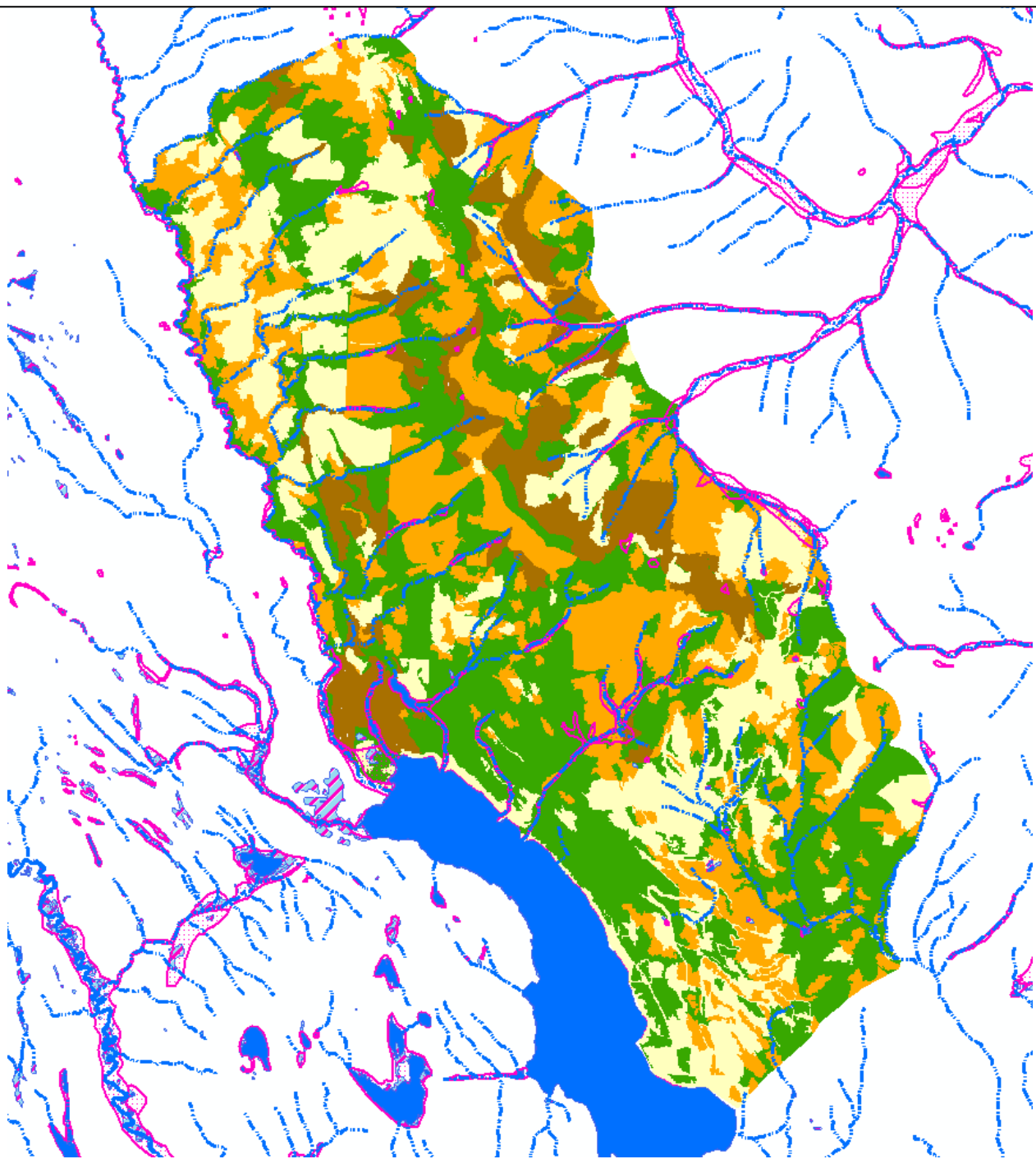
- Old Growth
- Recruitment OG
- Other
- ☒ EarlySeral
-

Map 3. Connectivity within and near the Hellroaring Basin Improvements Terrestrial Wildlife Analysis Area shown by Vegetation Data (Exhibit 12-10) and Old Growth (12-11) with 200-foot Contours



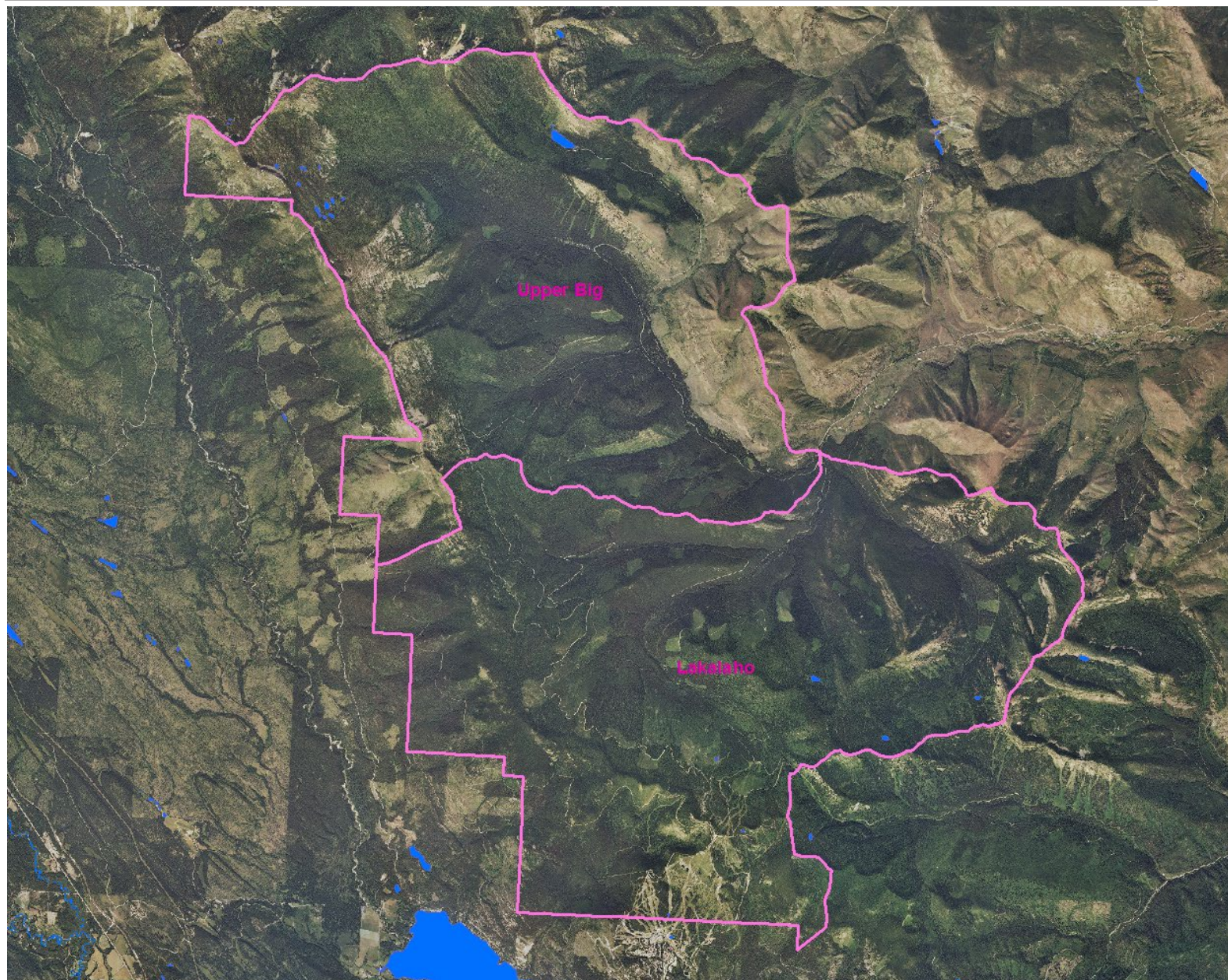
- Old Growth
- Recruitment OG
- Other
- ☒ EarlySeral
-

Map 4. Connectivity within and near the Hellroaring Basin Improvements Terrestrial Wildlife Analysis Area shown by Vegetation Data (Exhibit 12-10), Old Growth (12-11) with Streams and Riparian Areas



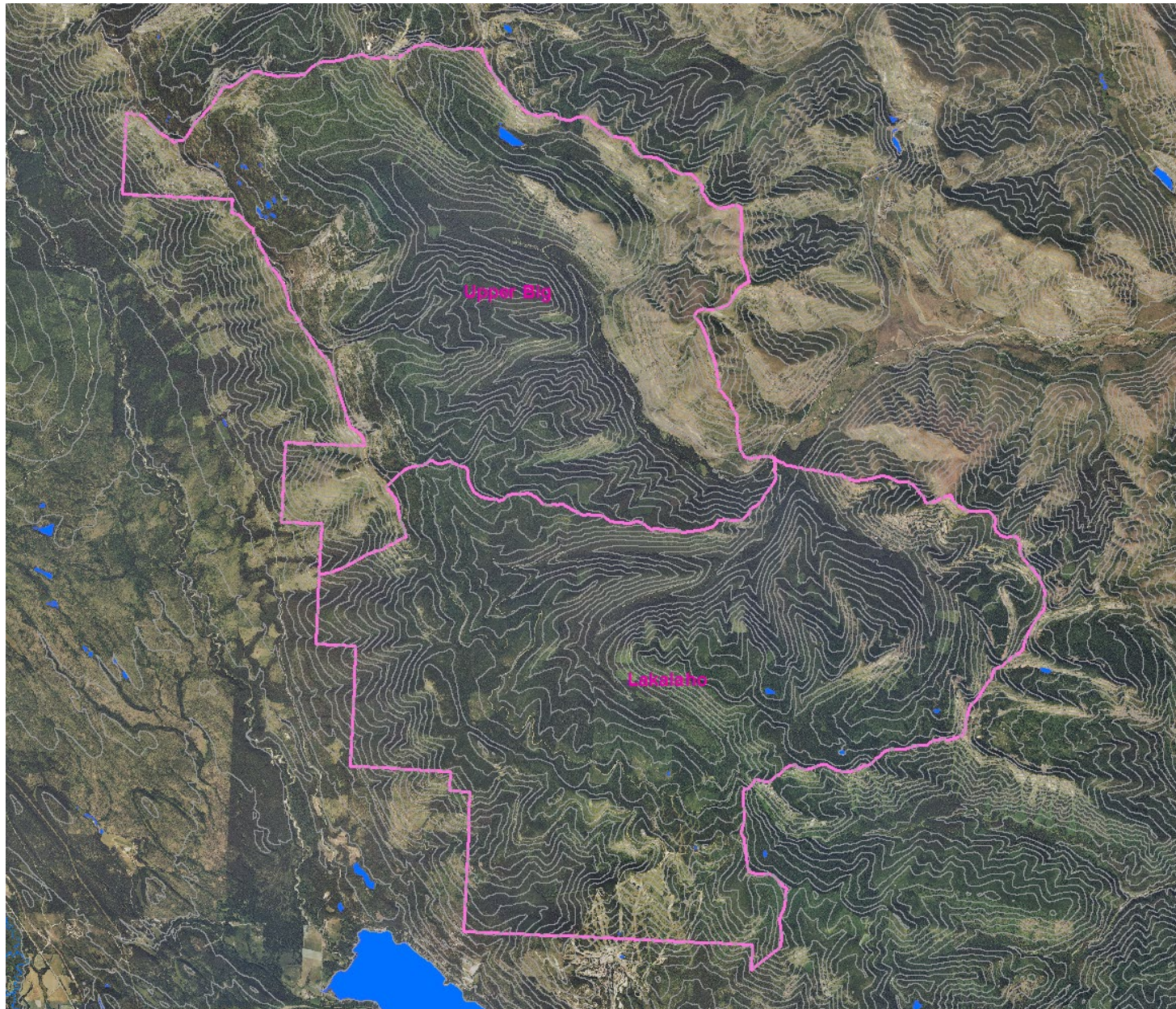
- | | | |
|---|--|--|
| ☒ DNRC_Hydro_Polys_clipped_201610 | ☒ Old Growth | ☒ EarlySeral |
| ☒ RiparianLandtypePolygons | ☒ Recruitment OG | ☐ |
| ☒ WetlandsNWI | ☒ Other | ☐ |

Map 5. Connectivity in and near the Upper Big and Lakalaho Lynx Analysis Areas as shown by NAIP Imagery



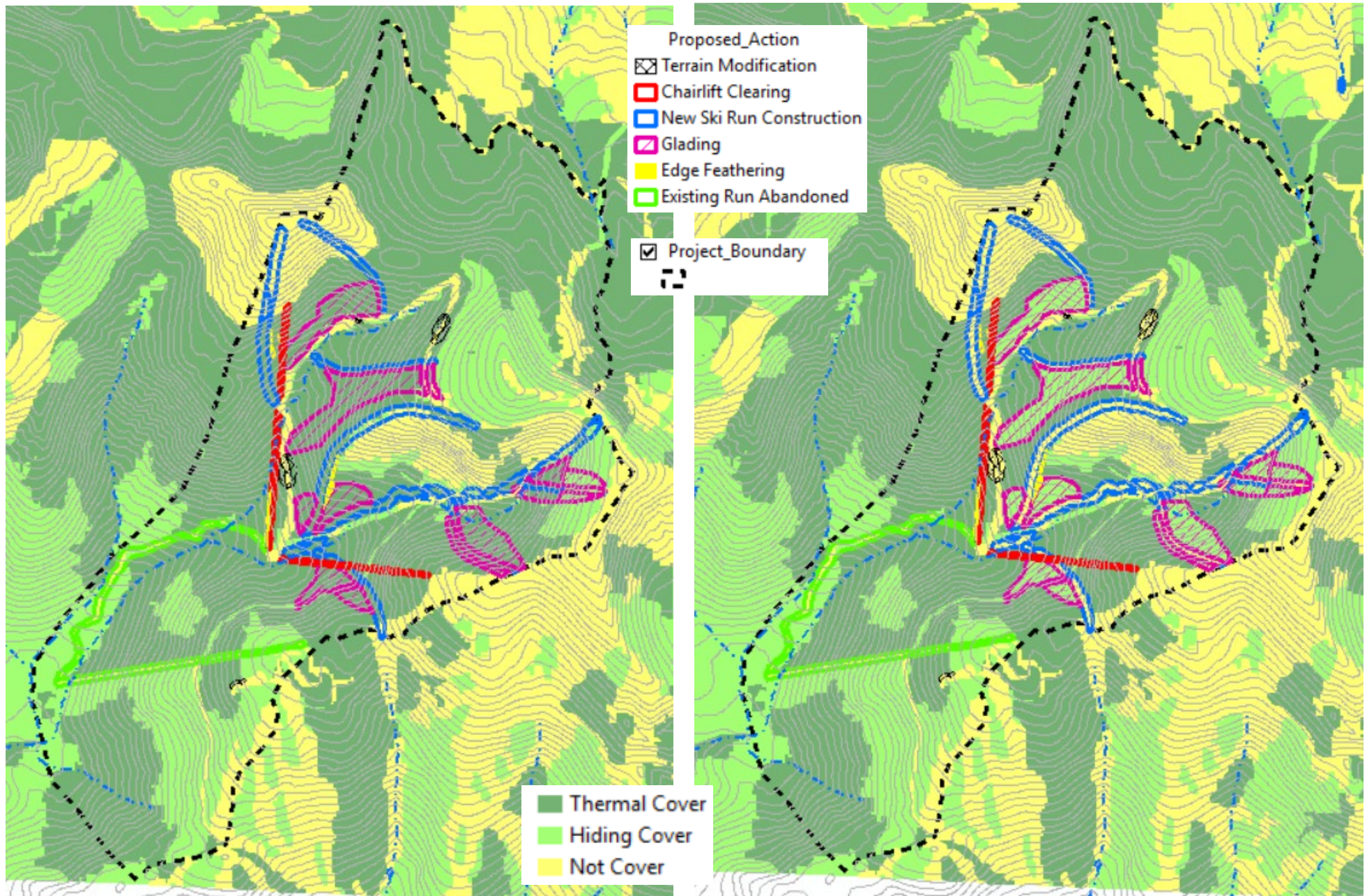
Map 6. Connectivity in and near the Upper Big and Lakalaho Lynx Analysis Areas shown by NAIP Imagery and 200-foot Contours

Hellroaring Basin
Exhibit 12-09

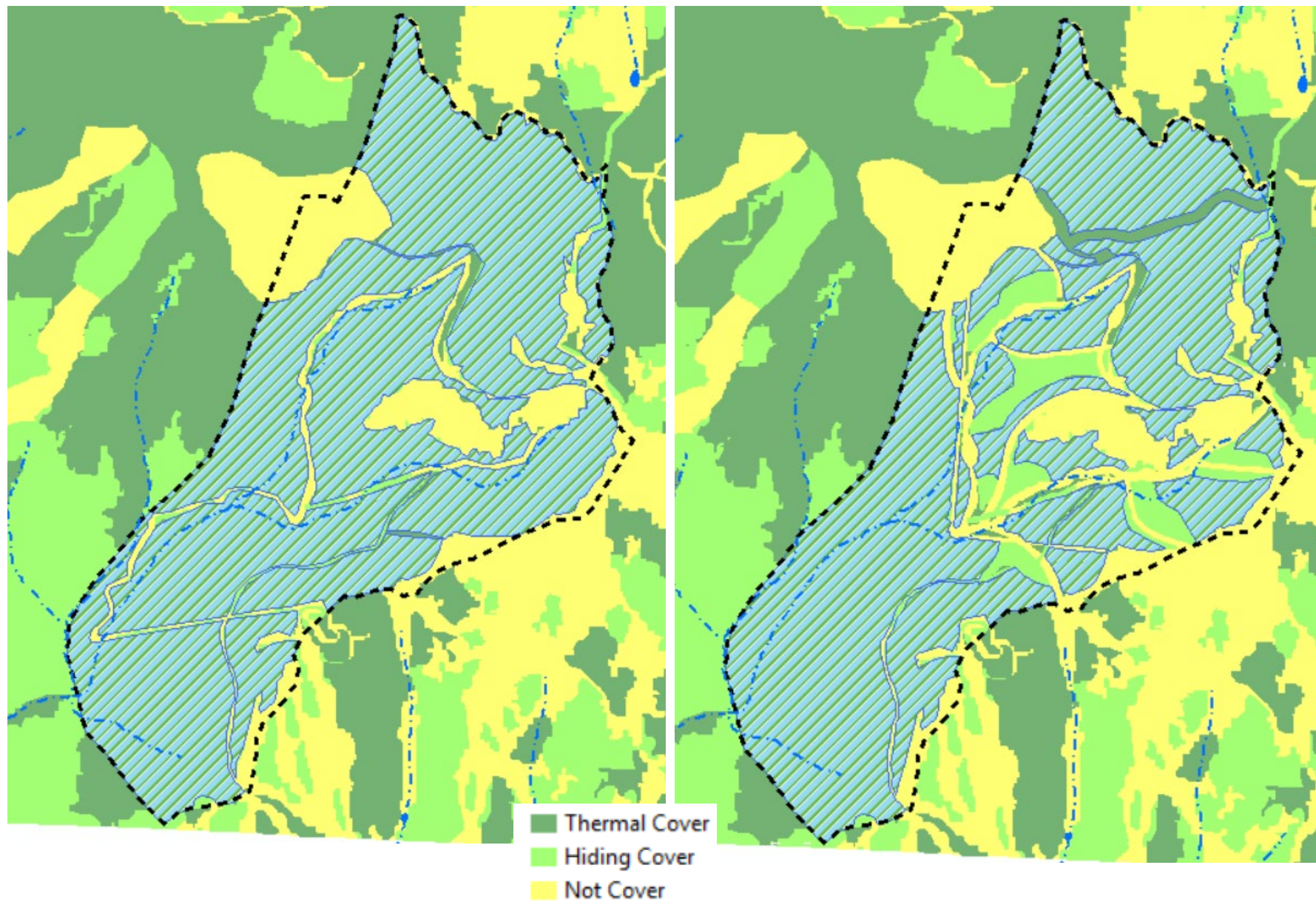


Map 7. Maps of forested connectivity in the project area pre-and post-implementation with 40-foot contour lines

Hellroaring Basin
Exhibit 12-09



Map 8. Inter-trail Islands of Security Habitat for Canada Lynx, pre- and post-implementation of the project



Map 9. Details of connectivity effects

