



Department of
Parks and Wildlife

Review of old-growth forest status

| | |
|--------------------------------------|---|
| Forest Block/ Compartment | Lewin 05/06 |
| Region | Warren |
| District | Donnelly |
| Date of request | 17 May 2017 |
| Origin of request | Public nomination |
| Location | Portions of the Lewin 05/06 harvest coupe. The coupe is located approximately 30km west of Manjimup, and is bounded by Graphite Road in the north and an unnamed track in the west. Pine Creek Road extends the length of the coupe (refer Appendix 1 – Base map) |
| Forest types | A mix of Karri, Karri/Marri, and Jarrah/Marri forest |

| | |
|----------------|--|
| Summary | <p>A review of the nominated area was conducted in accordance with the <i>Procedures for the assessment, identification and demarcation of old-growth forest</i> (FEM Procedure FEM075).</p> <p>Four individual patches of previously unmapped karri old-growth forest, totalling 17 hectares, were identified in the northern portion of the coupe, and an amendment to the boundary of a diverse ecotype zone.</p> |
|----------------|--|

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|------------------------|-----------------------------------|
| Report Reviewed | 25 June 2017 |
| Endorsed | M.Rayner |
| | Manager, Forest Management Branch |

1. Collation of background data and refinement of assessment area

1.1 Location of area under review

Appendix 1 depicts the location and boundaries of the Lewin 05/06 harvest coupe.

1.2 Forest type and structure

Aerial Photo Interpretation (API) conducted in 1963 indicates that the coupe comprised a mix of jarrah/marri and karri/marri forest types. The extent of these forest types was checked and confirmed using high resolution digital imagery acquired in 2009 and viewed in 3-D stereo. In 1963 the forest structure was predominantly massed stands of previously uncut forest of between 60-70 per cent crown cover, with a height class of 25-29 metres for jarrah/marri forest types and 40-50 metres for the karri/marri forest types (Appendix 2). Some areas in the north-west of the coupe were recorded as non-forest or scrub (mostly associated with stream zones), while several areas in the centre of the coupe were recorded as having had severe fire damage (Appendix 2).

The old-growth forest definition for these forest types is:

- Jarrah and jarrah/marri – uncut (never harvested) forest or forest subject to minimal disturbance and that is not affected by *Phytophthora cinnamomi*.
- Karri and karri/marri – uncut (never harvested) forest that is dominated by overstorey trees possessing mature or senescent characteristics.

1.3 Harvest history

Departmental harvest records indicate that the majority of the karri forest areas within the coupe had been cutover during the decade 1960-1969, while the jarrah dominant forest areas were cutover during 1970-79 (Appendix 3). The northern cells of the coupe were recorded as having no history of harvesting.

1.4 *Phytophthora dieback* status

The occurrence of *Phytophthora cinnamomi* within the coupe was completed on 23 February 2017. Approximately 175.5 hectares was interpreted, of which 88.9 hectares was classified as infested (Appendix 4). A further 16.7 hectares was classified as uninfested, with 69.4 hectares classified as uninterpretable. The uninfested areas are concentrated in the northern portion of the coupe.

1.5 Fire history

Fire history records indicate there have been four prescribed burns (1968, 1974, 1995 and 2009) within various portions of the coupe since the initial harvest in the 1960s (Appendix 5). The northern-most portion of the coupe recorded a fire event in 1955, which may have been a bushfire and contributed to the severe fire damage recorded in the 1963 API.

2. Stratification of disturbance history using aerial photograph interpretation and other datasets

Historical aerial photographs of the area acquired during the 1960s (Appendix 6) and 1970s (Appendix 7) were interpreted to classify areas of previous harvesting disturbance and inform the ground survey design. Areas with a high level of disturbance were clearly distinguishable, with landings, harvest access roads, snig tracks and prominent gaps in the overstorey canopy. Other areas with a medium level of disturbance had less obvious evidence of harvest, such as fewer landings and harvest tracks. Areas of low/medium disturbance had noticeable gaps in the canopy and a visible regrowth component, with few harvest tracks. Areas with low disturbance levels had little to no visible indications of harvest disturbance in the photographs. These observations were consistent with the Hardwood Operations Control System (HOCS) records of that time.

3. Field survey of stump occurrence

The areas surveyed for stump occurrence were defined using forest type boundaries, the interpreted levels of previous harvest disturbance, and the boundaries of *Phytophthora* dieback occurrence.

All jarrah forest areas were clearly heavily disturbed from previous harvest events and/or were infested with *Phytophthora* dieback. The presence of dieback precludes jarrah being classified as old-growth forest. While field verification of the harvest records was undertaken, stump surveys were not considered necessary in the jarrah areas and no changes to the current status of these forests is recommended.

Eight separate areas of karri forest (totalling approximately 57.5 hectares) were surveyed for stump occurrence and dominant forest structure to evaluate their potential old-growth forest status. The extremely dense understorey and period since last prescribed burn made it challenging to detect stumps from previous harvest events. Stumps were often concealed in the understorey vegetation, severely burnt and/or decomposed. Consequently, despite systematic survey, it is probable that the location and number of stumps recorded is an underestimate in the densest understorey patches. The typical stump size is depicted in Figure 1.



Figure 1. Example of a karri stump concealed in understorey vegetation with evidence of fire damage and decay. The clear-cut edge (flat top) and karri coppice on the back of stump provide evidence of cutting.

The GPS location of stumps and other evidence of disturbance activity (snig tracks, landings) was recorded and a map prepared from the GPS data (Appendix 8).

4. Analysis of stump and other data to determine old-growth forest status

Within the karri dominant areas, evidence of harvesting was apparent in six of the eight survey areas (labelled survey areas 3-8 in Appendix 8). General access tracks, snig tracks, landings and stumps were recorded along the transect lines and scrub-rolled tracks, as well as prominent cohorts of regrowth stems within mixed mature – regrowth stands (Figure 2).



Figure 2. Example of a cohort of young regrowth karri within a previously cutover stand (mixed mature – regrowth) in survey area 7.

The minimum mappable area of old-growth forest is two hectares. The location of stumps (depicted in Appendix 8), modified canopy structure and presence of regrowth in survey areas 3-8 indicate previous timber harvesting, and do not therefore meet the criteria for old-growth forest.

Survey areas 1 and 2 were mapped from historical photos as areas of low disturbance. Recent stereo imagery depicted a high proportion of regrowth stems in survey area 1; however, no stumps were located in the majority of this section which suggests the regrowth regenerated following a fire or storm event. Field results for these two areas were generally consistent with the stereo interpretation. Many of the surveyed cells had a mature component of greater than 25% crown cover, no evidence of timber harvesting and met the minimum 2 hectare requirement. It is recommended that these cells be reclassified as karri old-growth forest. In addition, an amended boundary to a Diverse Ecotype Zone (DEZ) was mapped from the stereo imagery and verified in the field survey. The recommended boundaries of the previously unmapped old-growth forest are depicted in Appendix 9 and are summarised in the table in section 5 (below).

5. Recommendations

As depicted on the map in Appendix 9:

| Recommendation | Area (ha) | Classification | Map colour |
|----------------|-----------|---------------------------------|-------------|
| 5.1 | 17 | Reclassify to old-growth forest | Brown |
| 5.2 | 2 | Reclassify to DEZ | Light green |
| 5.3 | 39 | Retain as non old-growth forest | Yellow |

6. Proposed corporate data amendments

| | | |
|-----|--|-----|
| 6.1 | Amendment of the corporate informal reserve dataset. | Yes |
| 6.2 | Amendment of the corporate harvest history dataset. | Yes |
| 6.3 | Amendment of the corporate old-growth forest dataset | Yes |
| 6.4 | A revised harvest coupe map depicting the additional informal reserves and reclassified old-growth forest. | Yes |

7. Appendices

| | |
|------------|---|
| Appendix 1 | Harvest coupe base map. |
| Appendix 2 | Section of original API map. |
| Appendix 3 | Harvest history from FMIS database. |
| Appendix 4 | Section of the <i>P.cinnamomi</i> occurrence map. |
| Appendix 5 | Fire history from corporate records. |
| Appendix 6 | 1960s historical photo interpretation depicting harvest disturbance. |
| Appendix 7 | 1970s historical photo interpretation depicting harvest disturbance. |
| Appendix 8 | Disturbance locations map depicting areas surveyed and GPS location of stumps and other disturbance indicators. |
| Appendix 9 | Old-growth forest status map: depicting the area to be classified as old-growth forest. |

Old-Growth Forest Status Review

Lewin 05/06

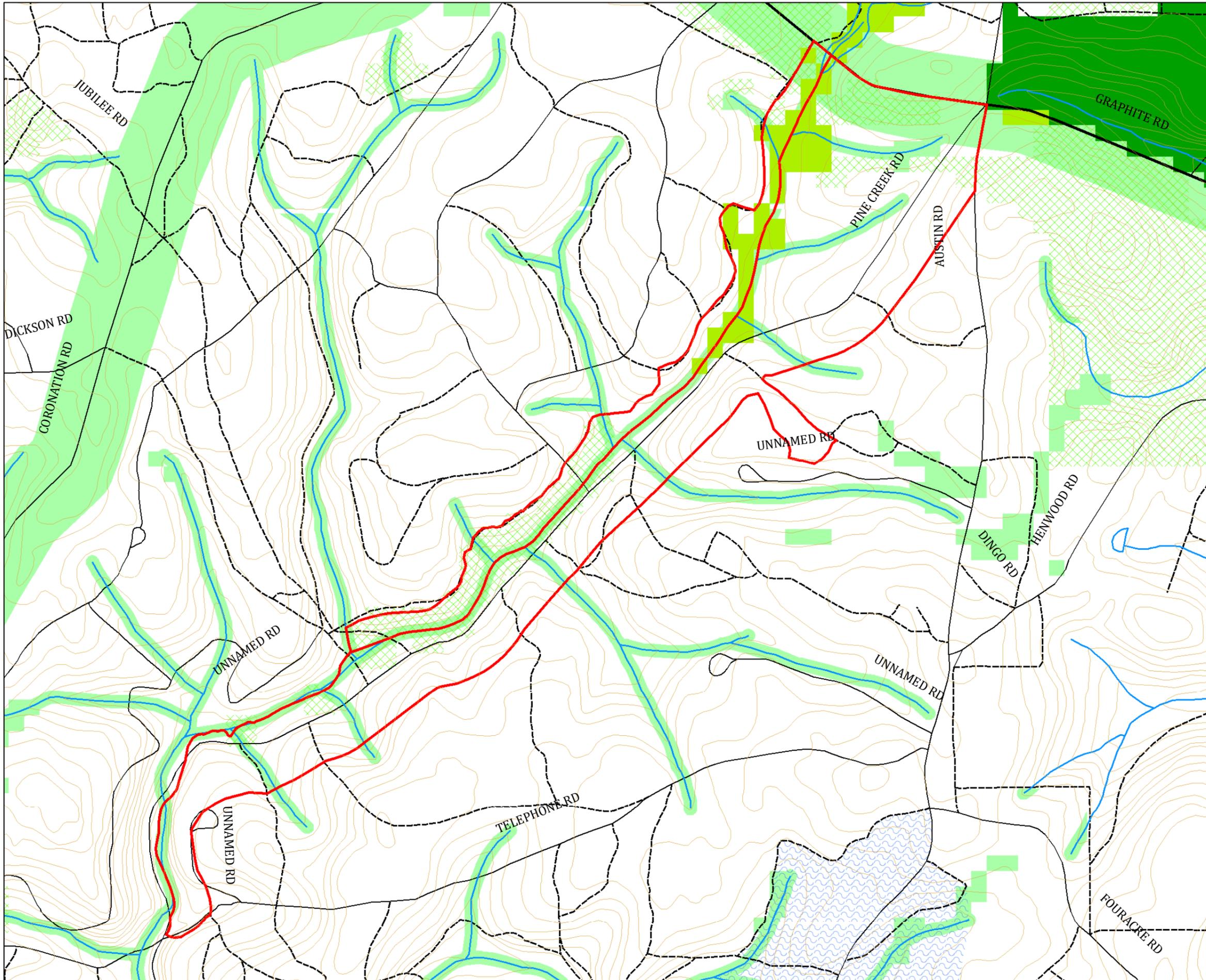
Base Map

LEGEND

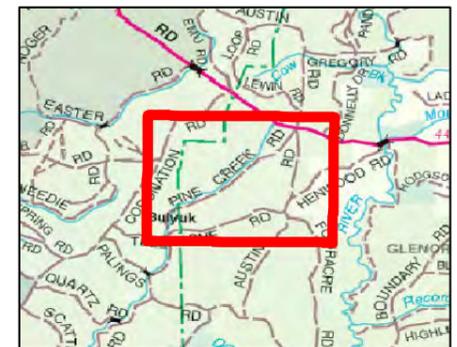
-  Proposed harvest coupe
-  Warren region relief 5 m

EXCLUSION AREAS

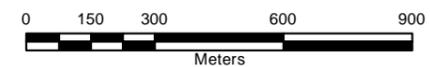
-  Existing and Proposed Conservation Reserves
-  CAR Informal Reserves
-  Other Informal Reserves
-  Old Growth Forest
-  Final Fauna Habitat Zones
-  Indicative Fauna Habitat Zones
-  Interim Fauna Habitat Zones



Map created on: 20/06/2017



Scale: 1:16,500



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Old-Growth Forest Status Review

Lewin05/06

Aerial Photography Interpretation

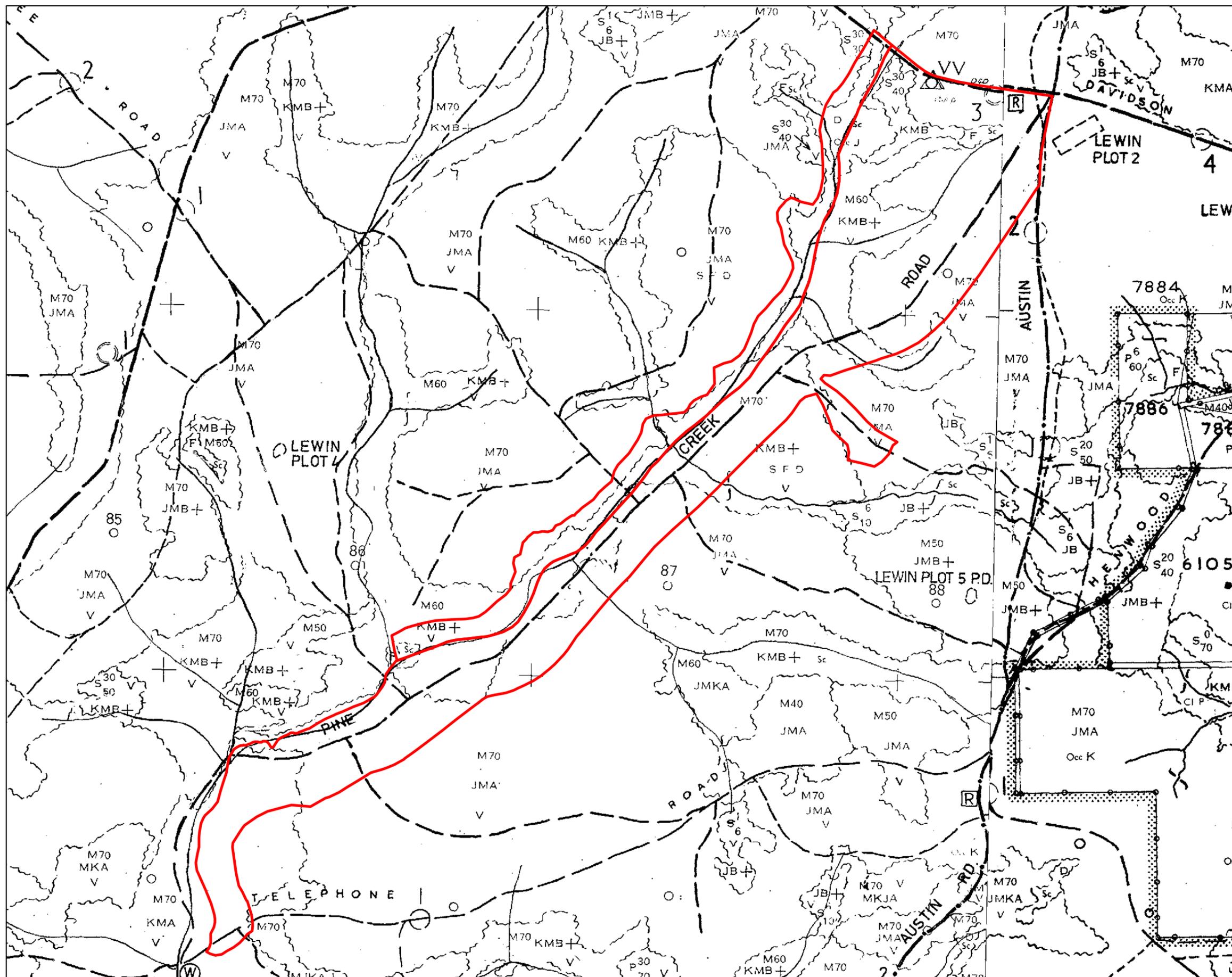
LEGEND

 Proposed Harvest Coupe

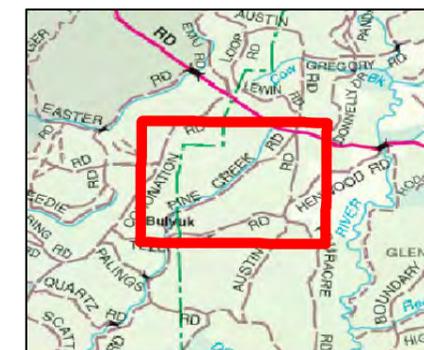
API Map: 127

Photography: Barlee BK DEC '59

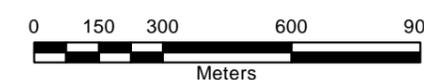
Interpretation: MANJ WPO Sept '63



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Old-Growth Forest Status Review

Lewin 05/06

Harvest History

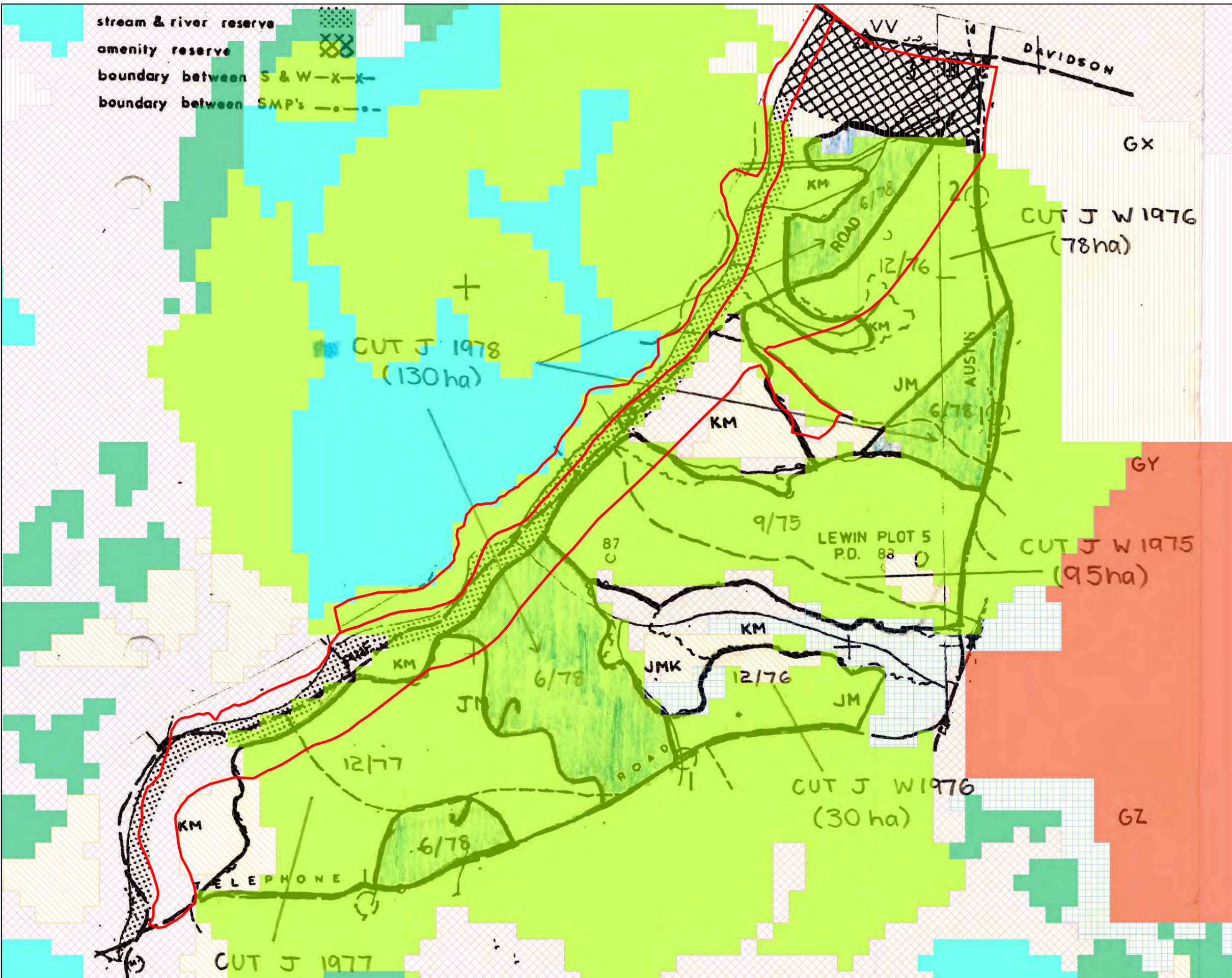
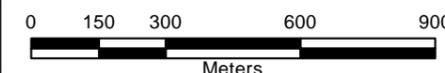
LEGEND

- Proposed Harvest Coupe
- Harvested 1920-29
- Harvested 1930-39
- Harvested 1940-49
- Harvested 1950-59
- Harvested 1960-69
- Harvested 1970-79
- Harvested 1980-89
- Harvested 1990-99
- Harvested 2000-2009
- Harvested 2010-2013
- Harvested before 1920
- No record of harvesting

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Old-Growth Forest Status Review

Lewin 05/06

Fire History

LEGEND

 Proposed Harvest Coupe

Fire Year

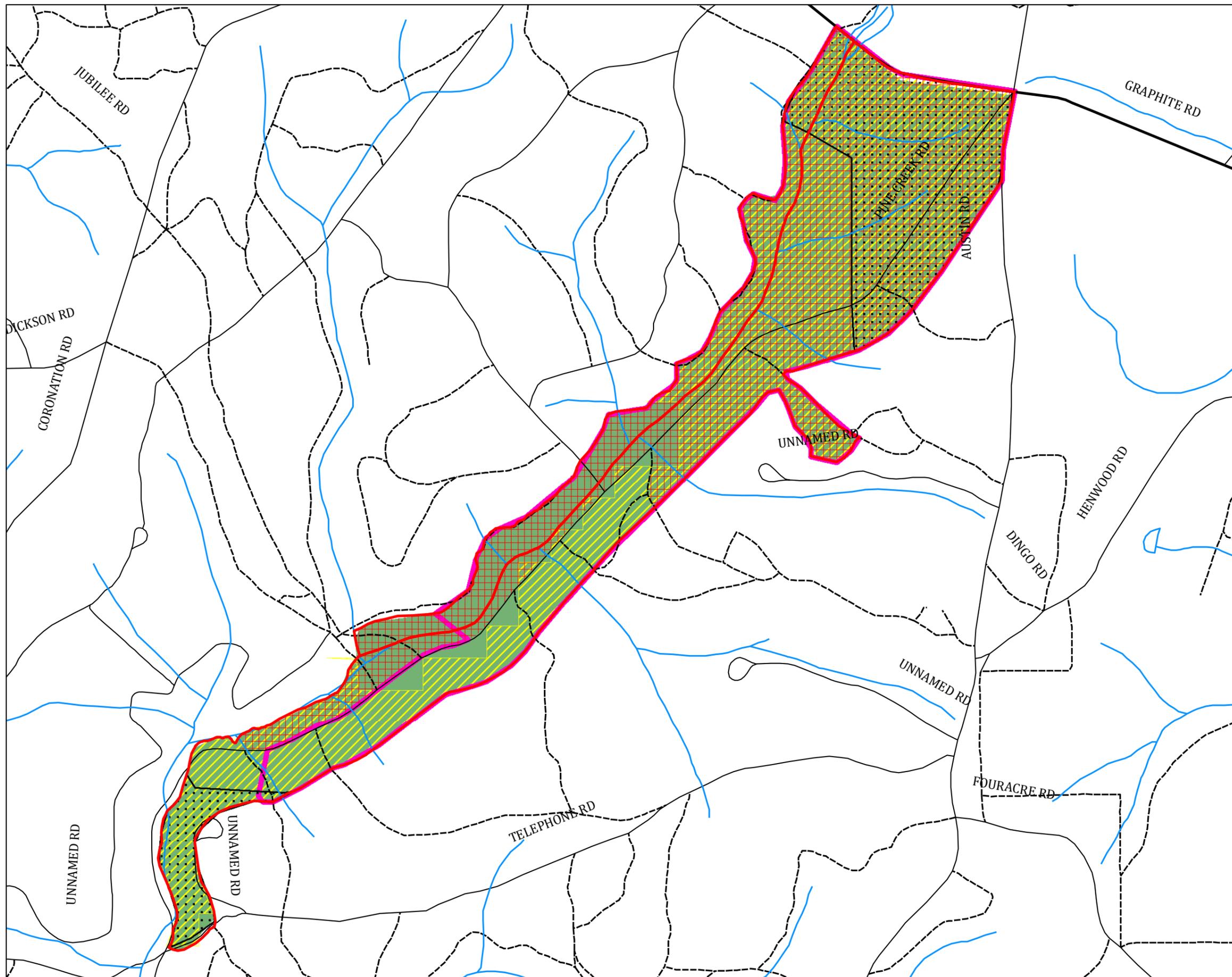
 1955

 1968

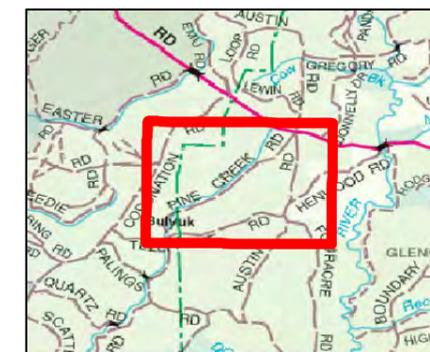
 1974

 1995

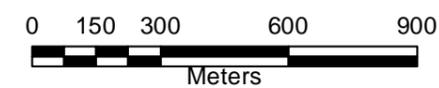
 2009



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Old-Growth Forest Status Review

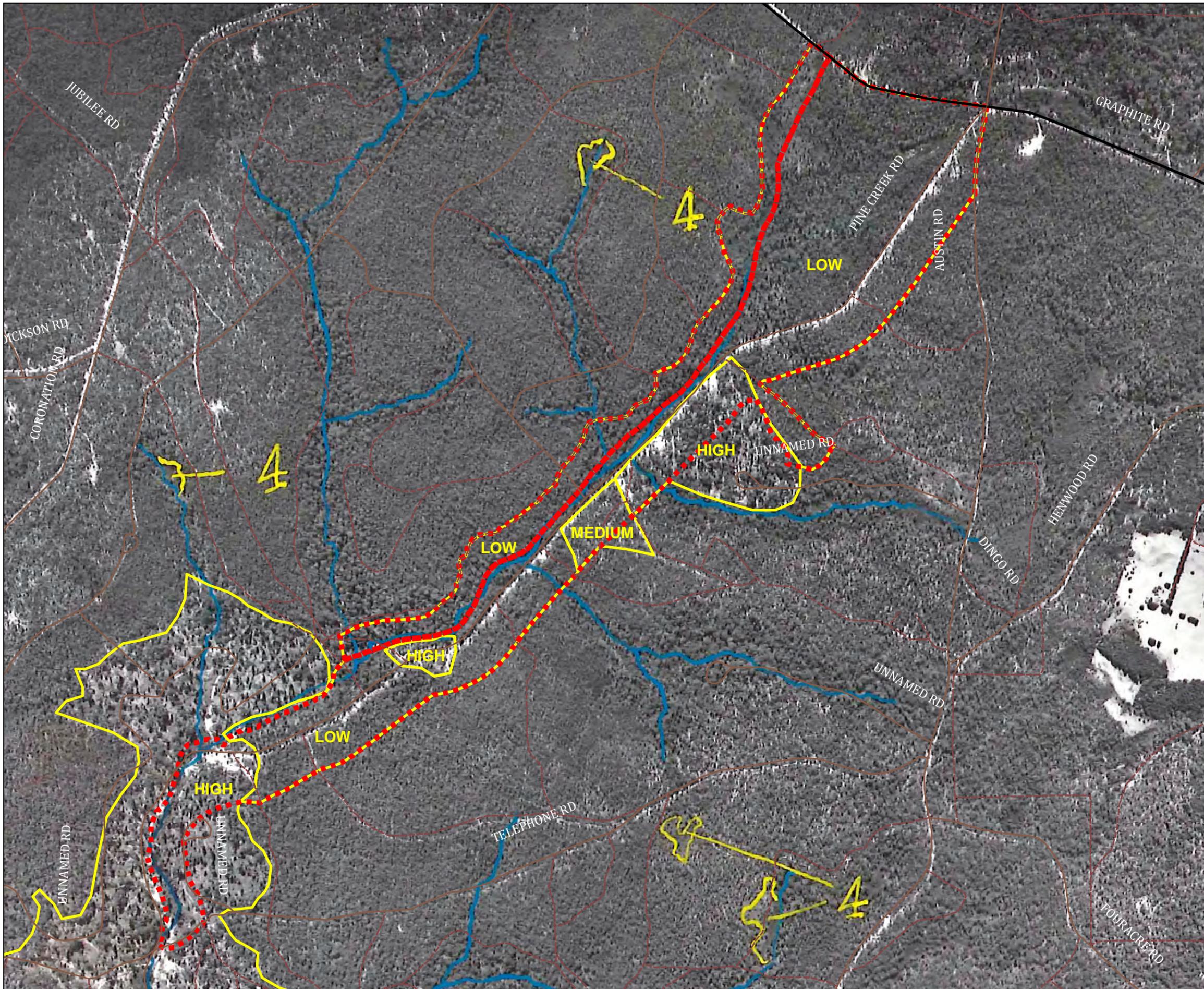
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**1960s
Aerial Photography
Interpretation**

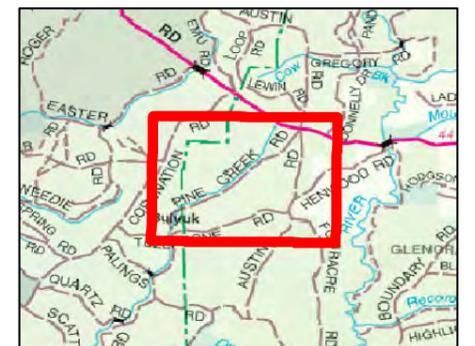
Photography: Pemberton 1966,
Run 5, photo 5069

LEGEND

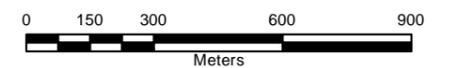
-  Harvest coupe boundary
-  1960s harvest disturbance interpretation



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Old-Growth Forest Status Review

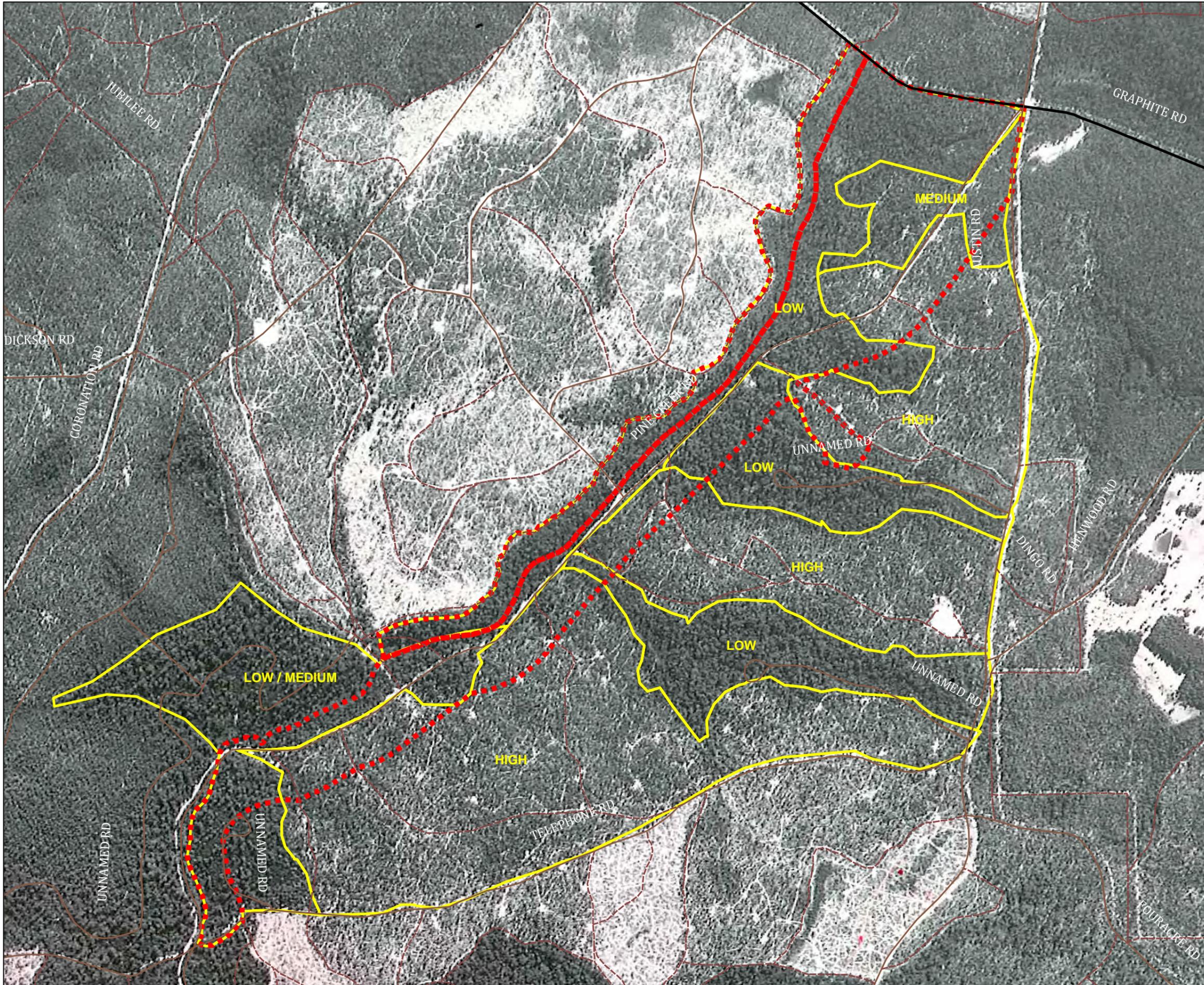
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1970s Aerial Photography Interpretation

Photography: Pemberton 1976, 1:25 000, Run 4, photo 5650

LEGEND

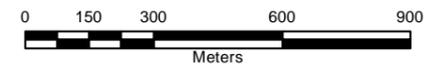
-  Harvest coupe boundary
-  1970s harvest disturbance interpretation



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Appendix 8 Old-Growth Forest Status Review

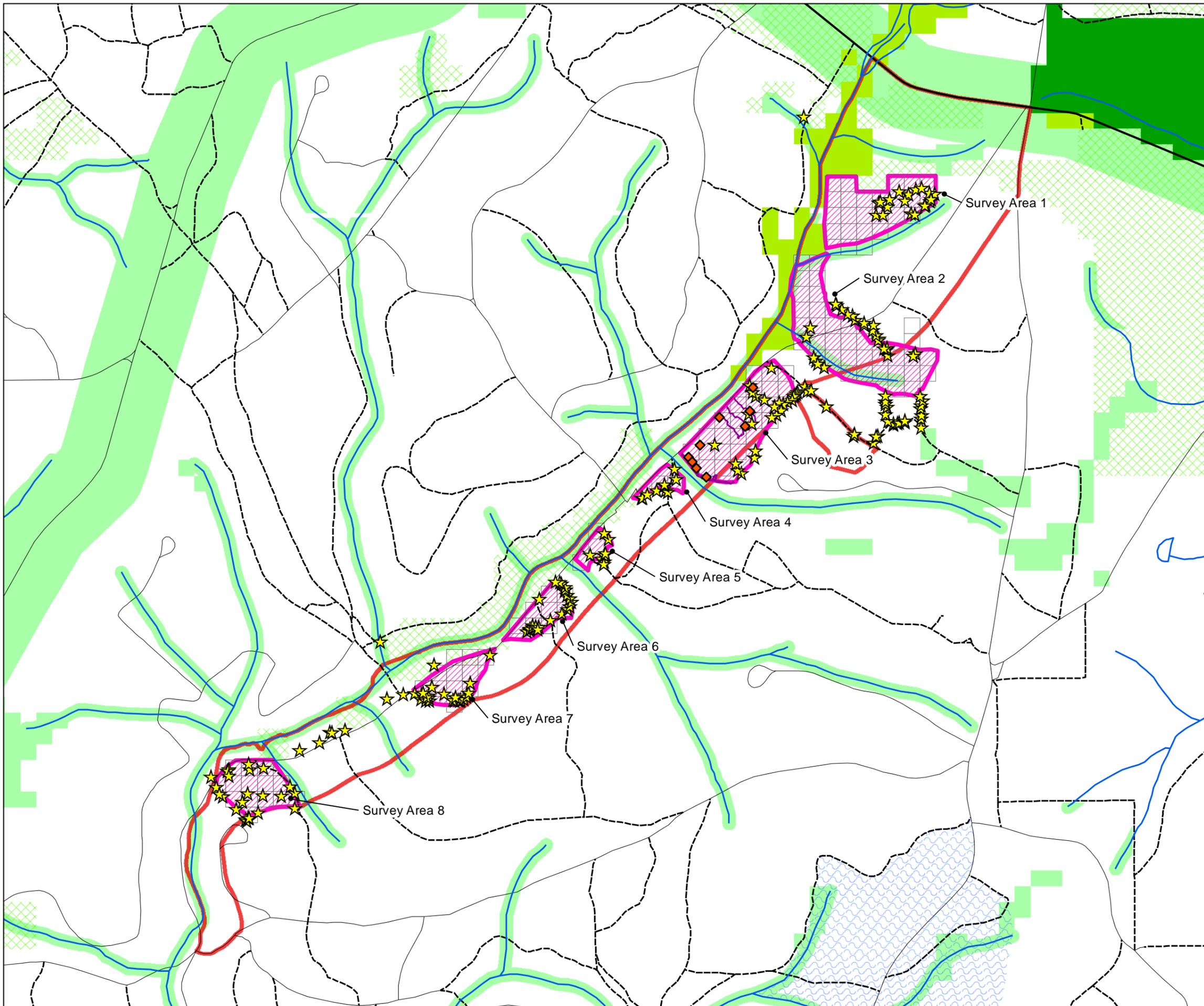
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Disturbance Locations

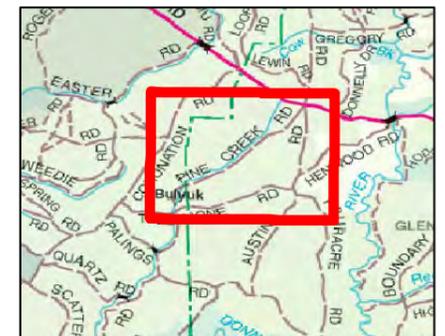
LEGEND

-  Proposed harvest coupe
-  Survey area

-  Stumps
-  Other evidence of disturbance
i.e landings, harvest tracks

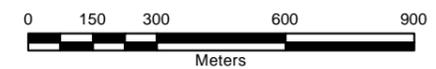


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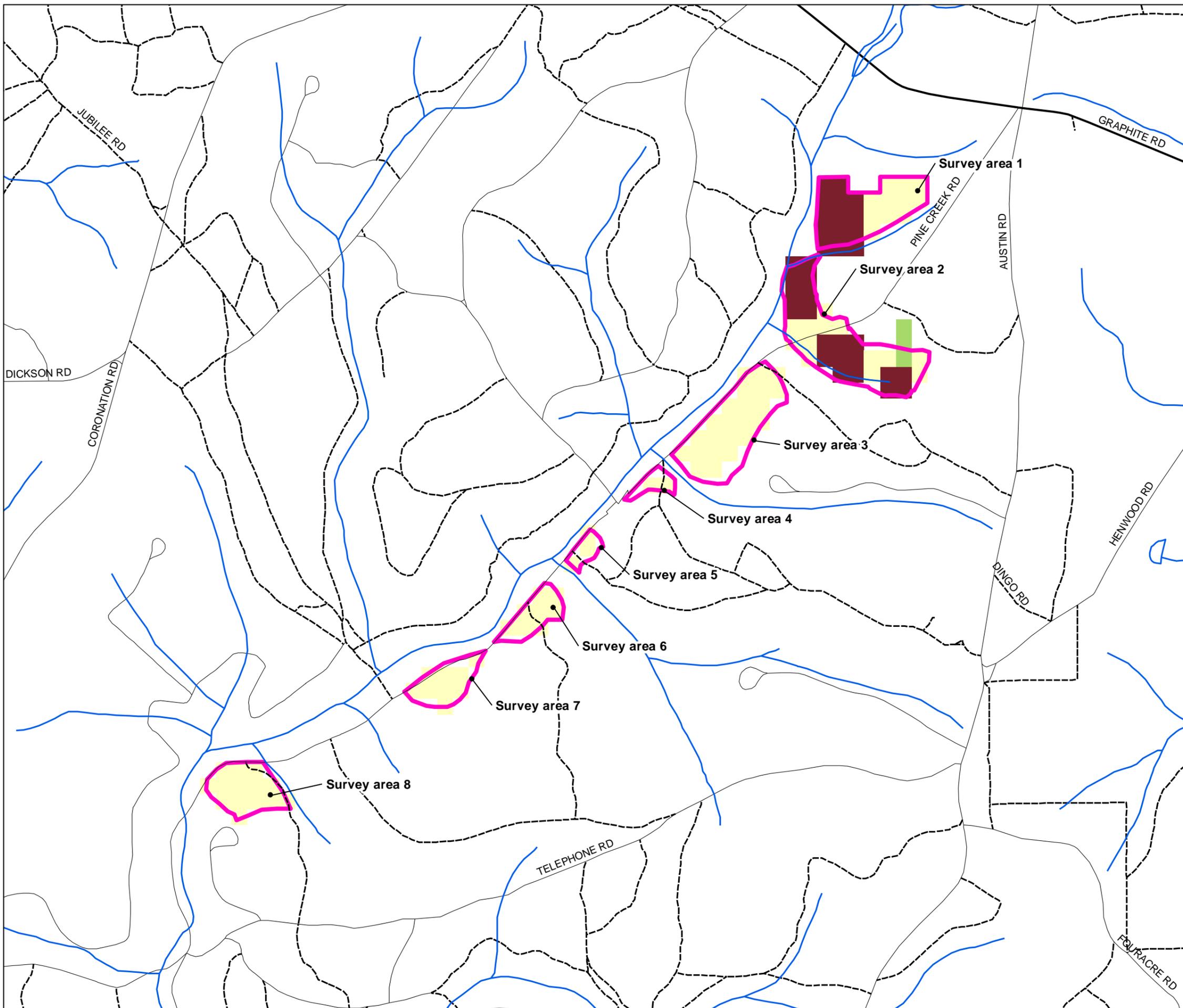
Old-Growth Forest Status Review

Lewin05/06

Old-Growth Forest Status

LEGEND

-  Proposed Harvest Coupe
-  Survey area
-  Reclassify to old-growth forest
-  Retain as non old-growth forest
-  Reclassify to DEZ



Map created on: 20/06/2017



Scale: 1:16,500

