

Analysis of WUI and proposed roadless areas in Colorado

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Purpose

The purpose of this document is to provide information on the amount of proposed Colorado roadless areas¹ that might be encroached on by forest treatments associated with community protection zones around the wildland-urban interface (WUI). The definition of WUI used here is based on the Federal Register Definition of *interface* as 5 acres per unit and higher density, and *intermix* as between 5-40 acres per unit.² The housing density data that are used to identify interface density were computed using US Census block data for 2000, with refinements that included public ownership, roads, land cover, and groundwater well density.³ The interface – but not the intermix⁴ – was then buffered by 1.5 miles to generate the community protection zone (CPZ). The buffer may extend less than 1.5 miles from the interface for areas that do not have high hazardous fuels (e.g., ponderosa pine forest), such as developed, grassland, or lakes. The amount of the WUI and CPZ that overlapped with roadless areas was then calculated. I also developed a coarse estimate of the roadless areas and their intersection with critical watersheds.⁵ This is designed to provide a rough way to understand the potential maximum amount of roadless areas that might be effected if treatment is needed to protect critical water supply infrastructure. Finally, I examined forest and vegetation types⁶ that were within the WUI + CPZ.

Results

Roughly 164,300 acres of roadless areas are within the WUI + CPZ. This is about 4.1% of the roadless areas, and about 7.2% of the total amount of CPZ. Forecasted growth based on population projections to 2030 show a likely expansion of the WUI, leading to roughly 546,900 acres of the roadless areas intersecting with designated roadless areas (13.6% of

¹ As defined in Colorado roadless area draft EIS and GIS shapefile: *cra_rdl_s_DRAFT_EIS_6may2008*.

² See: Theobald, D.M. and W.H. Romme. 2007. Expansion of the US wildland-urban interface. *Landscape and Urban Planning* 83: 340-354.

³ Basic methods described in: Theobald, D.M. 2005. Landscape patterns of exurban growth in the USA from 1980 to 2020. *Ecology and Society* 10(1): 32. [online] URL: <http://www.ecologyandsociety.org/vol10/iss1/art32/>.

Modifications to generate a WUI layer for Colorado State Forest Service figure: Colorado's wildland-urban interface, current and projected. In *2007 Report on the Health of Colorado's Forests*. Colorado State Forest Service.

⁴ Other publications have computed the area of "WUI" to include the intermix areas, including: Radeloff et al. 2004; and Wilmer and Aplet 200x.

⁵ As designated in the Colorado Forest Health Assessment, using watersheds that contain a drinking water intake or reservoir, or a watershed within 5 miles upstream.

⁶ Types from LANDFIRE dataset, grouped as in the Colorado Forest Health Assessment.

RA). The extent of watersheds with critical drinking water supply infrastructure is over 14.6 million acres, of which 1.8 million acres are roadless areas (12.5%).

WUI + CPZ	Statewide acres	Acres of WUI + CPZ in RA	% of RA	% of CPZ
2000	2,284,128	164,328	4.1%	7.2%
2030	5,432,486	546,905	13.6%	10.1%

Vegetation/cover type	Acres	Percent of WUI + CPZ
Mixed conifer	390,289	17.09%
Grassland	337,337	14.77%
Aspen	292,583	12.81%
Ponderosa Pine	277,826	12.17%
Lodgepole	232,051	10.16%
Agricultural	168,540	7.38%
Pinyon-Juniper	162,444	7.11%
Spruce-fir	141,509	6.20%
Built-up	103,680	4.54%
Montane riparian forest	74,556	3.26%
Oak shrubland	60,698	2.66%