# Echo Hills – Plan Unit 1

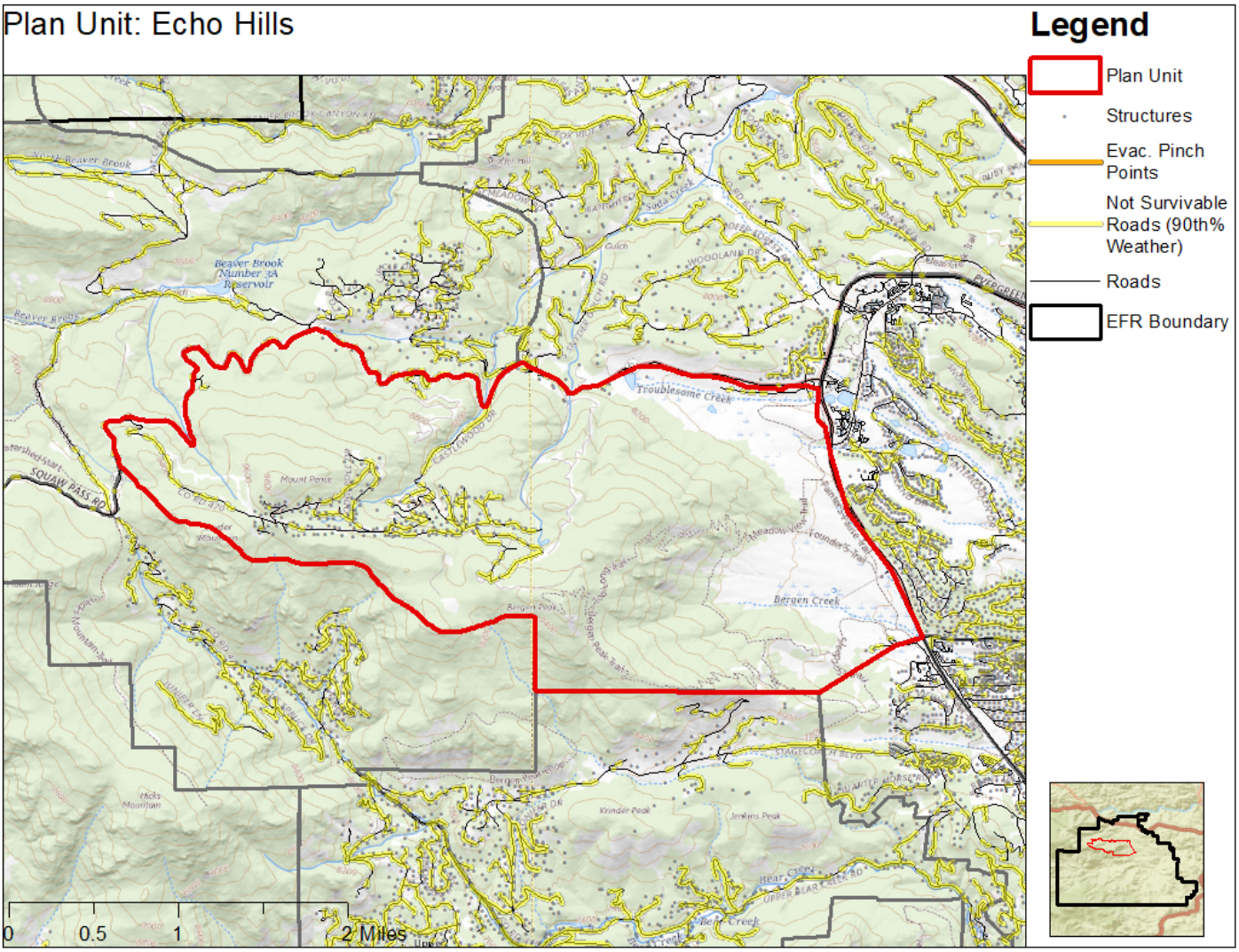
## *Rating: Extreme*

| Evacuation Data Summary | | | | | |
|---|---|---|---|---|---|
| Number of Structures | Number of Cars | Average Time to Evacuate (min) | Median Time to Evacuate (min) | Minimum Time to Evacuate (min) | Maximum Time to Evacuate (min) |
| 196 | 452 | 53 | 54 | 37 | 59 |

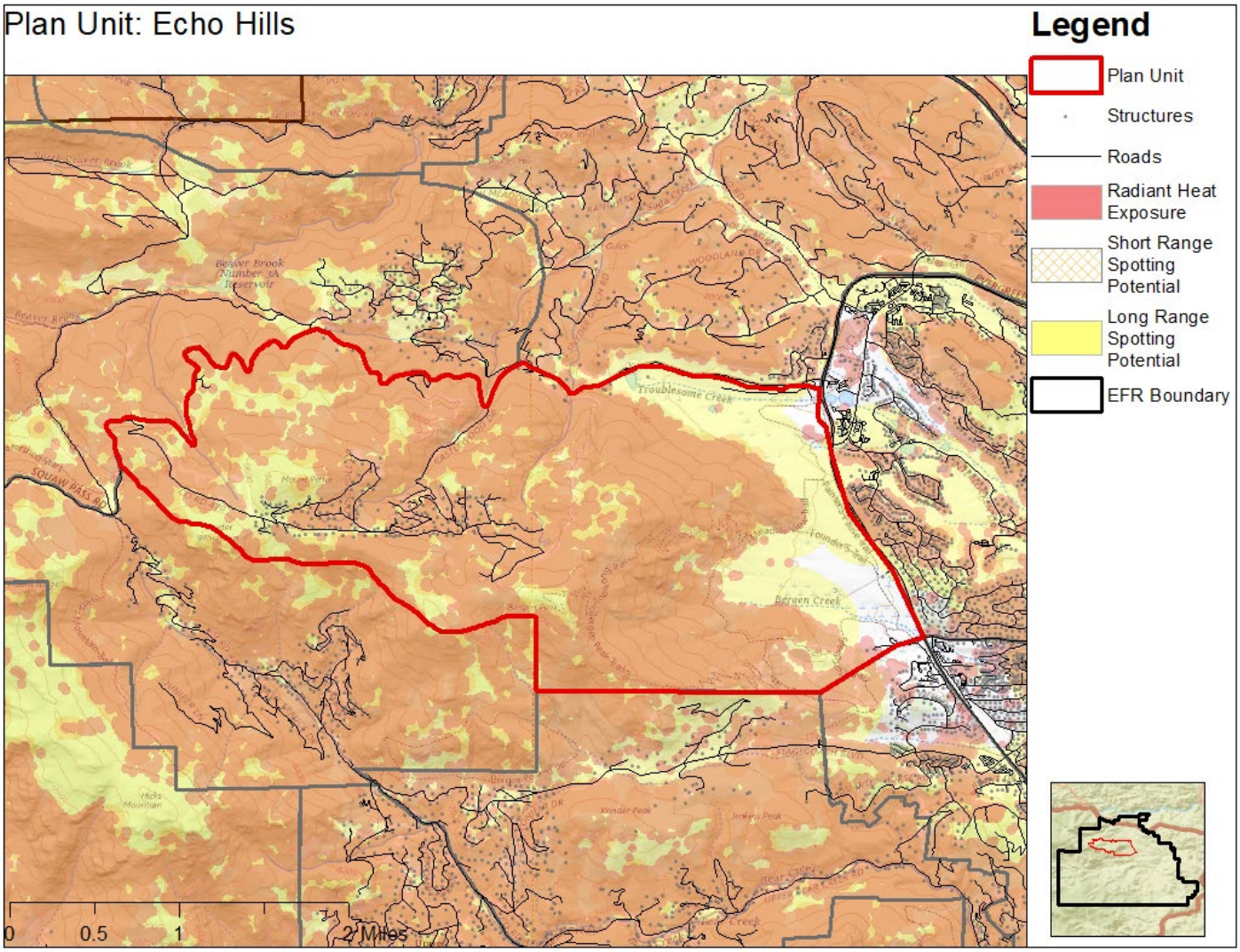
The development in this Plan Unit is concentrated to one high elevation community situated in Lodgepole Pine forest. The fuels surrounding the community are mature, dense, and susceptible to high severity, stand replacing fire. Echo Hills contains good accessibility. No accessible water sources are visible with above ground utilities.

This neighborhood is a mix of two resident types: permanent residents and summer-only homes. There is obvious contrast between the wildland fuel mitigation between the two resident types. As a generalization summer homes have minimal to no defensible space, while the permanent residences have done substantial cutting around homes and further into adjacent fuels. Many summer homes are situated in thick Lodgepole Pine forest which will burn intensely, but historically experience less frequent wildfire.

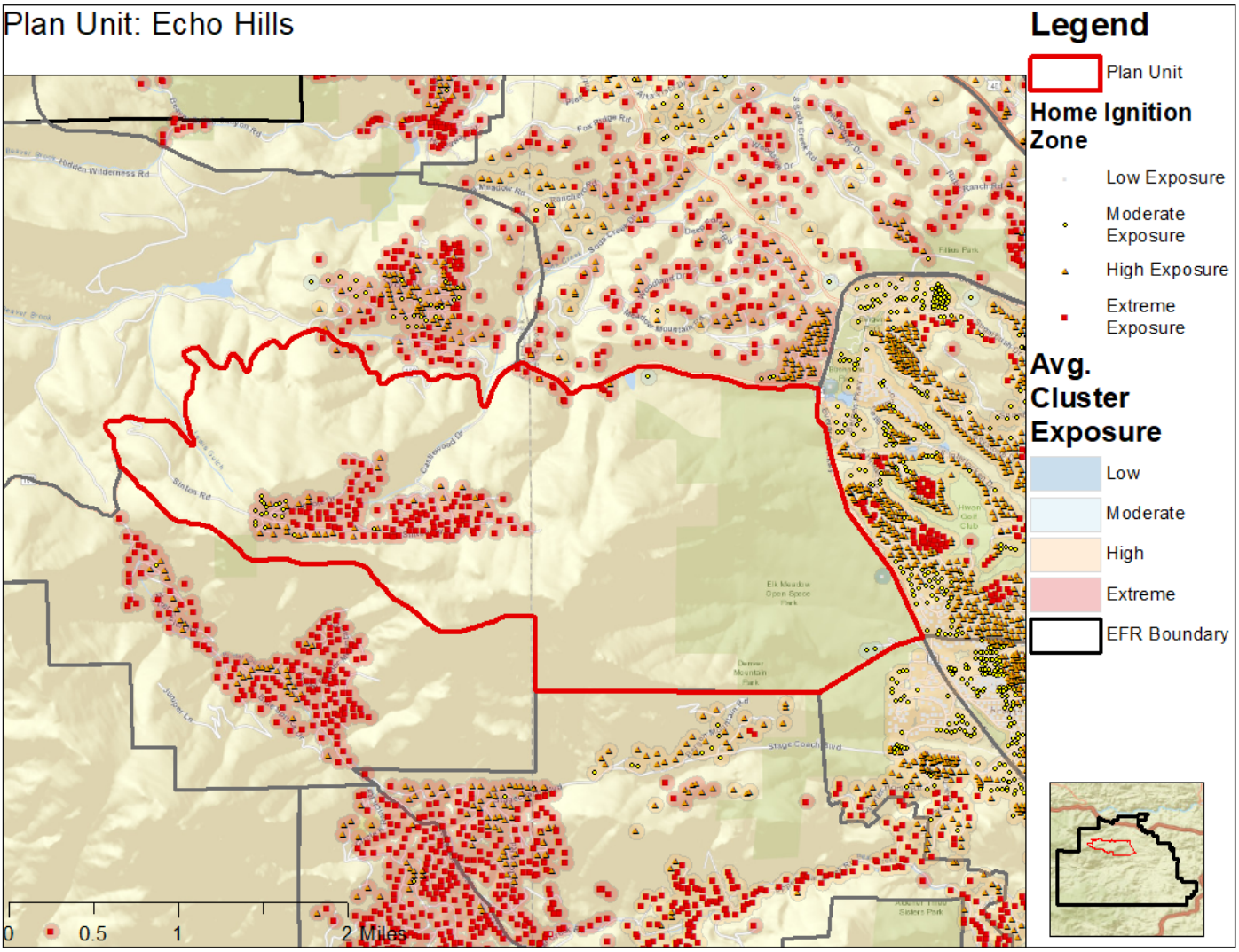
The U.S. Forest Service is working on extensive cutting and piling along access County Road 470 in mixed conifer.  USFS should be encouraged to continue these treatments for protection of Echo Hills residents and to ensure proper egress in the event of a fire.




Echo Hills has no modeled Evacuation Pinch Points. Squaw Pass Road and Sinton Road, a major evacuation corridor leaving the Echo Hills Plan Unit, is largely not survivable during a 90$^{th}$ percentile modeled fire scenario and must be a priority for treatment. Castlewood Drive would be the only alternate location for evacuation but would require a tremendous amount of wildland fuel treatment to become a secondary route due to topography. Squaw Pass Road and Sinton Road should be the primary roadway improvement priority for Echo Hills.



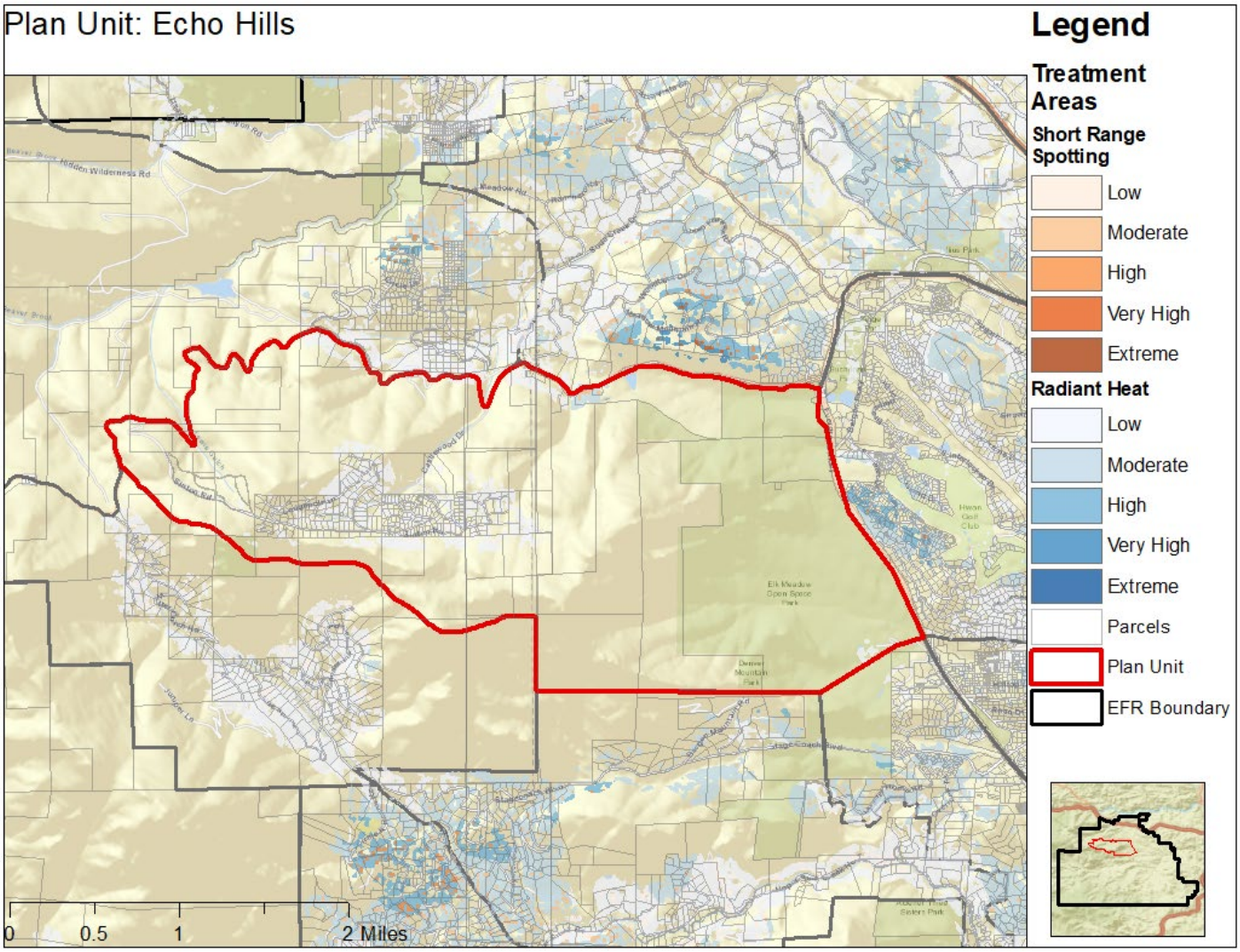

Radiant Heat exposure is designed to show neighborhoods where vegetation will create fire behavior extreme enough to ignite home materials. Short- and long- range spotting is when embers travel a distance from the fire and continue its spread away from the main fire –this can be a deluge of embers that is difficult to combat. These ignition risks are present to extreme degrees in Evergreen Fire Protection District. Different visualizations of this data are mapped on the following pages and will give residents a clearer path forward to mitigation.




Ember exposure outputs (radiant heat, short range spotting, and long-range spotting, as seen above) were overlaid with structure points buffered as the Home Ignition Zone (100 ft). Structures in which greater than 50% of the home ignition zone was covered by radiant heat, short range spotting, or long-range spotting were defined as being at risk from that hazard. Extreme exposure means all three factors are present, as the model indicates.

These values were then aggregated at the structure cluster level which are dissolved 100 m buffers of structures. If a structure's 100m buffer intersects a different structure's buffer, they are part of the same cluster. Average exposure to all the structures in the cluster is displayed behind the structure point on the above map. This means that even though some structures may be a lower risk due to the wildland fuels adjacent to their home, they will be still at extreme risk as home to home ignition is extremely likely.

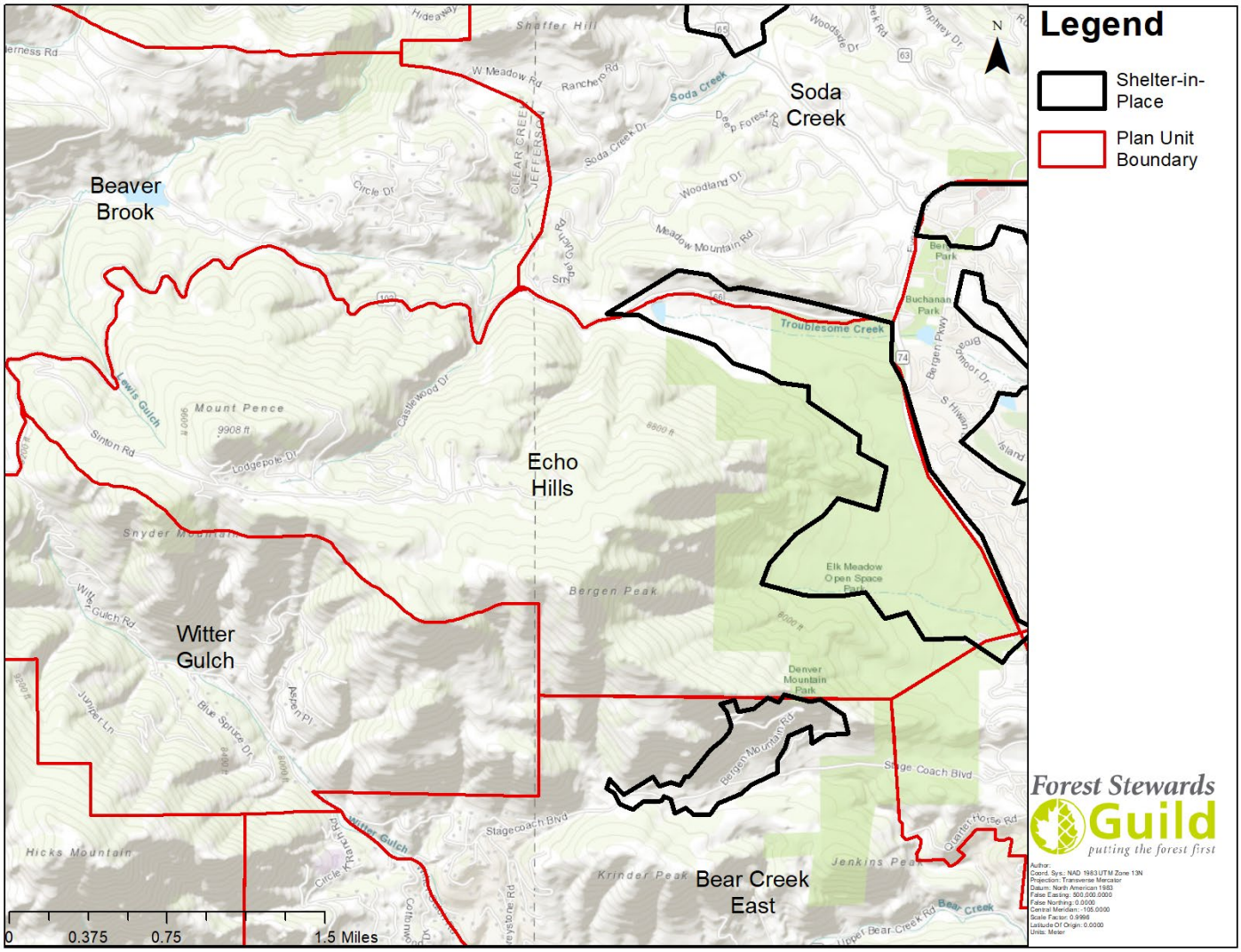
Echo Hills has many extreme exposure structures, and the average cluster exposure is extreme. This extreme cluster exposure means homes that are at lower risk from radiant heat & short- and long-range spotting are put at higher risk by their connection to other, higher risk structures. Developing robust defensible space work and implementing home hardening practices will reduce the rating of this cluster.




Radiant heat and short-range ember exposure are displayed and filtered by accessible treatment areas (by slope and distance to a roadway). High to Extreme risk areas displayed in those maps are highest priority to protect from radiant heat and short-range spotting, however, this does not negate the need for defensible space treatment across the landscape.

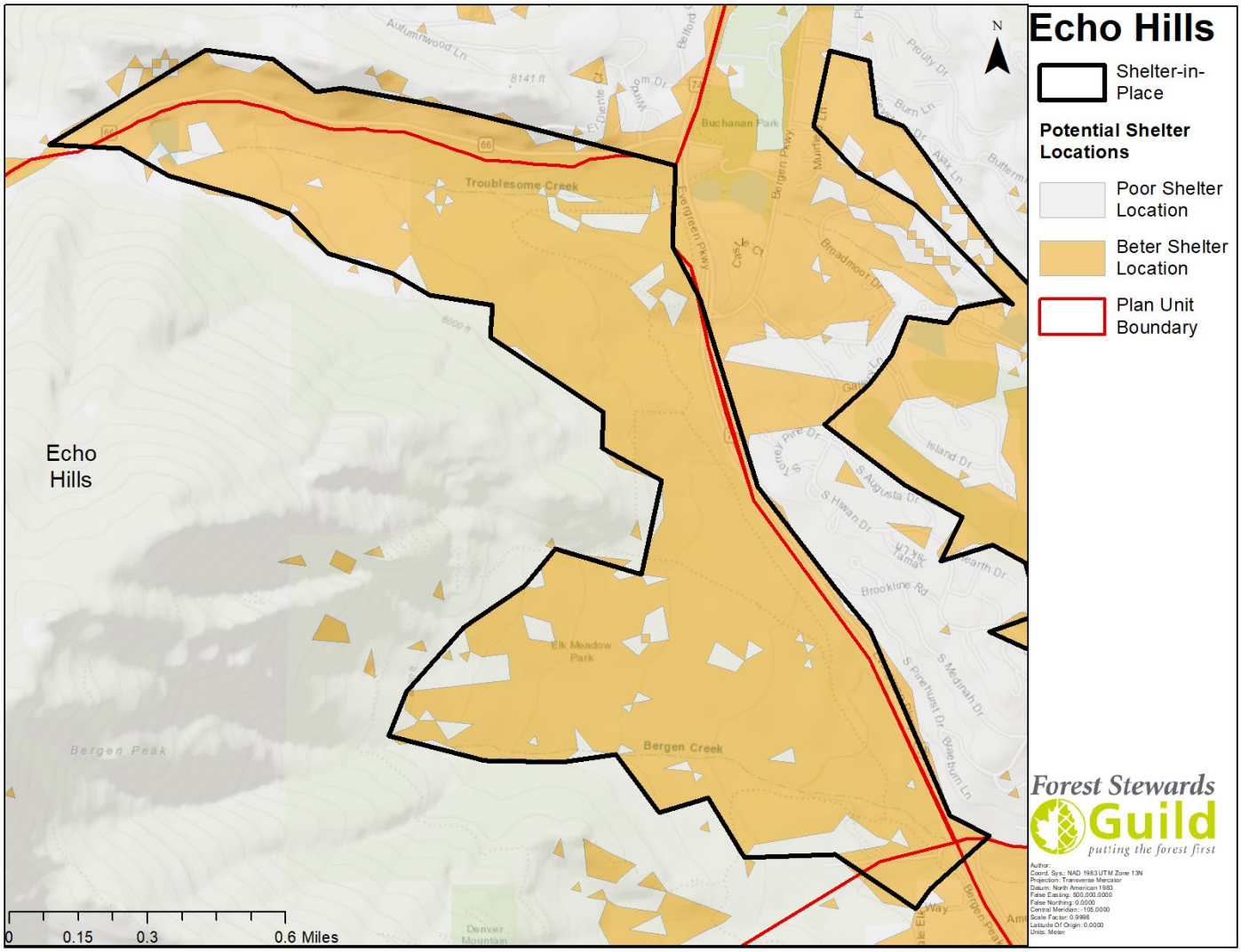
In Echo Hills, locations of high risk are not easily treatable due to slope. One option for this Plan Unit would be to treat all treatable areas, shown above on this map, and reduce the risk of wildfire transmission while improving tactical firefighting options. The other option would be to work with a hand crew and do fuel treatment in the areas of highest risk on steeper slopes, surrounding homes and structures with extreme risk.

## ***Shelter-in-place***




For the purposes of this CWPP, a shelter-in-place location is a location within a neighborhood that residents could drive to and survive the flame front of a wildfire. Shelter-in-place locations are a worst-case scenario option where all other evacuation and rescue efforts have failed. A shelter-in place location is an area where a person can stay safe during a flaming front. No resident should view these locations as a great place to go during a wildfire. If these locations are needed, first responders will direct vehicles in the right direction and determine how many vehicles will be safe during that wildfire event. Evergreen Fire Protection District was modeled for slope and vegetation throughout Evergreen and 20 mph winds using the Butler equation, described in detail in the Shelter-In-Place fuel treatment prescription section.

In the Echo Hills Plan Unit, there is no currently possible shelter-in-place location where the residential population lives. At this time, evacuation completely out of this Plan Unit is recommended, as it is not easy for residents to access the proposed shelter-in-place location that falls within the boundaries. The location shown in the above map is recommended for Evergreen Fire Protection District to improve. Elk Meadow creates a great location for shelter in place here, though access from 74 will prove challenging. Most of this location falls in Jefferson County Open Space - Elk Meadows and needs very little mitigation to be a successful shelter-in-place location. Coordination with JCOS will be crucial to effectively utilize this property.




This is a close view of the proposed shelter-in-place location for Echo Hills. This is a large area and one of the best locations for this in Evergreen. Poor shelter locations within this boundary are areas where fuel loading is still too high. These areas should be mitigated to improve the overall shelter location.